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The opinions expressed and arguments employed here are the responsibility of the author and do not necessarily reflect those of Eurostat.

Table of contents

Acknowledgments	3
Table of contents	4
Table of figures	6
Glossary and Acronym list	7
1. Introduction	8
1.1. Background.....	8
2. Reconciliation of EU-SILC and NA data	11
2.1. Conceptual comparison.....	11
2.2. Income components and adjustments.....	13
2.3. Empirical comparison.....	14
2.4. Results of the comparison and lessons learned.....	16
3. Breakdown of household accounts data by household groups	20
3.1. Adjustment of the scope of National Accounts totals.....	21
3.2. Imputations on the EU-SILC data.....	23
3.2.1. Social transfers in kind.....	23
3.2.1.1. Insurance approach for health care.....	24
3.2.1.2. Consumption approach for education.....	24
3.2.2. Transfers between households.....	25
3.2.3. Property income.....	25
3.3. The classification of variables.....	26
3.3.1. The income concept for the classification variables.....	27
3.4. Breakdown of National Accounts data by groups of households.....	27
3.4.1. National Accounts working components.....	27
3.4.2. Breakdown methods.....	29
3.4.3. The benchmark procedure.....	30
3.4.4. The EU-27 aggregate.....	31
4. Results of the breakdown of National Accounts data by groups of households	32
4.1. Household type.....	33
4.1.1. National Accounts subtotals by household type.....	33
4.1.2. Disparity indicators by household type.....	35
4.2. Main source of income.....	37
4.2.1. National Accounts subtotals by main source of income.....	37
4.2.2. Disparity indicators for main source of income.....	38
4.3. Equivalised disposable income quintile (EQID).....	39
4.3.1. Disparity indicators by disposable income quintile.....	39
4.3.2. Income quintile share ratio: comparison with EU-SILC.....	40
4.4. Comparison of disparity across classification variables on the EU-27 aggregate.....	42
5. Conclusions and future steps	44
References	46
Technical annexes	47
Annex 1: Data sources for the a-minima exercise.....	47
Annex 2: Reconciliation of the EU-SILC and NA datasets in detail.....	48
General conceptual and methodological reconciliation.....	48
Reference population and scope.....	48
Statistical units and availability of detailed data.....	49
Income reference period.....	49
Income concept.....	49
Reconciliation by income component.....	50
Compensation of employees.....	53
Gross operating surplus and mixed income.....	53
Property income received.....	57
The French case.....	58
The Italian case.....	58
Social benefits other than social transfers in kind (received).....	59
Social benefits other than social transfers in kind and housing allowances.....	60
Social benefits other than social transfers in kind and pensions from individual private plans.....	61
Other receipts.....	62

<i>Property income paid</i>	63
<i>Taxes on income and wealth and social contributions</i>	64
<i>Other expenditure</i>	66
Annex 3: Property income imputation for Italy.....	68
Annex 4: Expert Group on disparities in a National Accounts framework	71
Income components list.....	71
Micro cash disposable income	72
Annex 5: Reducing the scope of National Accounts data: separation of estimates for (i) households and (ii) non-profit institutions serving households	74
Introduction	74
Sources	74
Method	74
Disposable income gross — step 1	74
Total resources (TR) and total uses (TU) — step 2.....	75
Distribution of TR and TU and their components — step 3	75
Annex 6: Reducing the scope of National accounts data: separation of estimates for (i) private households and (ii) non-private households.....	77
Sources	77
Method	78
A further step for Italy	81

Table of figures

Figure 1: Coverage rates by country and by National Accounts component (2008)	16
Figure 2: Average gap indicator for NA income (2008).....	19
Figure 3: From National Accounts total to subtotals	20
Figure 4: Estimated share of non-private households in National Accounts totals by income component.....	23
Figure 5: Disposable income: across country distribution of worst-off and best-off household types (2008).....	34
Figure 6: ADI country distribution of worst-off and best-off household types (2008).....	35
Figure 7: Disparity index by household type-disposable income per consumption unit (2008).....	36
Figure 8: Disparity index by household type - adjusted disposable income per consumption unit (2008)	37
Figure 9: Range of average disposable income by main source of income across countries (2008)	38
Figure 10: Disparity index by main source of income (2008).....	38
Figure 11: Disparity index by EDIQ-disposable income per consumption unit (2008).....	40
Figure 12: Comparison of S80/S20 results between the a-minima and EU-SILC (2008).....	41
Figure 13: By country share of households in the EU-27 quintiles (2008).....	42
Figure 14: Disparity for the EU-27 aggregate: comparison across classification variables (2008)	43
Figure 15: Coverage rates for compensation of employees (2008).....	54
Figure 16: Coverage rates for operating surplus plus gross mixed income (2008)	56
Figure 17: Coverage rates for property income received, before FISIM allocation (2008)	59
Figure 18: Coverage rates for social benefits other than social transfers in kind (2008).....	61
Figure 19: Coverage rates for property income paid without any adjustment for FISIM (2008).....	64
Figure 20: Coverage rates for current taxes and social contribution (2008).....	66
Figure 21: Households distribution by combination of HT and EIQ_other (%) — comparison of EU-SILC and BI_SHIW	69

Glossary and Acronym list

ADI	Adjusted Disposable Income
AGI	Average Gap Indicator
AWG	Ageing Working Group
COFOG	Classification of the Functions of Government
CR	Coverage rate
DG ECFIN	Directorate General for Economic and Financial Affairs (European Commission)
DI	Disposable Income
ECB	European Central Bank
EFTA	European Free Trade Association
EFTA countries	Iceland (IS), Liechtenstein(LI), Norway (NO), Switzerland (CH)
EGDNA	Joint OECD- Eurostat Expert Group on Disparities in a National Accounts framework
EPC	Economic Policy Committee (composed of officials from the Member States, DG ECFIN and the ECB)
ESS	European Statistical System
ESSPROS	European System of Social Protection Statistics
EU	European Union
EU-27	European Union of 27 Member States
EU-27 member states	Belgium (BE), Bulgaria (BG), the Czech Republic (CZ), Denmark (DK), Germany (DE), Estonia (EE), Ireland (IE), Greece (EL), Spain (ES), France (FR), Italy (IT), Cyprus (CY), Latvia (LV), Lithuania (LT), Luxembourg (LU), Hungary (HU), Malta (MT), the Netherlands (NL), Austria (AT), Poland (PL), Portugal (PT), Romania (RO), Slovenia (SI), Slovakia (SK), Finland (FI), Sweden (SE), the United Kingdom (UK)
EU-SILC	European Union Statistics on Income and Living Conditions
FISIM	Financial intermediation services indirectly measured
HFCS	Household Finance and Consumption Survey
HSA	Household Sector Accounts
ISCED	International Standard Classification of Education
NA	National Accounts
NPH	Non-private households refer to part of the population that is excluded from the EU-SILC
NPISHs	Non-profit institutions serving households
OECD	Organisation for Economic Co-operation and Development
PH	Private households refer to the part of population covered by EU-SILC
Stiglitz Report	Report of the Commission on the Measurement of Economic Performance and Social Progress
Stik	Social transfers in kind
TF-HP	Task Force households perspective and distributional aspects of income, consumption and wealth
UOE	UNESCO/OECD/Eurostat

1. Introduction

This report presents the results of a study carried out by Eurostat to improve the monitoring of the economic situation of households in the European Union (EU). The improvement made in this study is to explain how national income is distributed across different groups of households in the EU in a way that is both harmonised across countries and coherent with national accounts aggregates. The report includes the first comparable indicators of the distribution of income across households in the EU.

The study forms one of two parts of a broader project with a similar aim. Whereas the Eurostat part focusses on the use of harmonised sources from within the European Statistical System for countries in the EU, the other part focusses on the best sources of information on a country's situation, irrespective of whether the source is an internationally-harmonised one or not.

The project belongs to a work programme being carried out in response to the recommendations made in the report of the Commission on the Measurement of Economic Performance and Social Progress, published in 2010, and authored by Stiglitz, Sen and Fitoussi (henceforth termed the Stiglitz Report). The Stiglitz Report sets out 14 recommendations to improve the measurement of societal progress, moving away from existing narrow economic measures such as Gross Domestic Product (GDP) to a broader range that can reflect the multi-dimensionality of a population's quality of life and well-being better.

Recommendations 2 and 4 of the Stiglitz Report respectively are, 'Emphasise the household perspective' and 'Give more prominence to the distribution of income, consumption and wealth'. The rationale for these recommendations is that, inter alia, changes in national income may not impact on households at all, while other changes may have a differential impact on different types of household, resulting in, for example a rise in living standards for some and no change or declining living standards in others. National aggregates and per capita averages, in effect, mask what is going on at the household level. In respect to these two recommendations, the working programme invited the European Statistical System (ESS) to work up the set of methods, sources and conventions required to allow statistical producers to both emphasise the household sector and to give more prominence to the distribution of income, consumption and wealth.

The objective of the whole project, that is partially described here, is to develop comparable indicators of the distribution of (or the disparity in) income, consumption and wealth that are consistent with the national-level information in the National Accounts (NA).

Consequently, the starting point is to bring together two usually-separate datasets. On the one hand NA, which include national economic aggregates for income, consumption and wealth, and on the other, household social information from sources such as the EU Statistics of Income and Living Conditions (EU SILC), which also includes data on income at the household and personal level, and therefore provides an insight into the patterns of the distribution of income within the population.

1.1. Background

Following the recommendations in the Stiglitz Report, Eurostat set up a Task Force to explore data from a household perspective and to work on distributional aspects of income, consumption and wealth (referred to as TF-HP). The Task Force's mandate included the need to analyse how the European Statistical System should meet the challenge of producing disparity indicators for income, consumption and wealth that are matched with NA data.

In its final report published in May 2011 ⁽¹⁾, the Task Force expressed special recommendations on the future steps for producing these indicators, involving the disaggregation of the Household Sector Accounts using microdata on household income and expenditure (and wealth). Among these

(1) The report is downloadable at the following link:
http://epp.eurostat.ec.europa.eu/portal/page/portal/pgp_ess/0_DOCS/estat/TF1_Final_report_Household_Perspective.pdf.

recommendations, the Task Force gave the mandate to a specific forum to deal with the methodological aspects linked to the production of these indicators.

Given the OECD's interest in launching a similar exercise from the perspective of its wider membership, a joint OECD-Eurostat Expert Group on Disparities in a National Accounts framework, or EGDNA for short, was set up at the beginning of 2011 to ensure a co-ordinated approach in assessing the feasibility of producing such indicators by the end of 2012. Twenty five countries participated in the EGDNA ⁽²⁾, plus the European Central Bank (ECB) and the Luxembourg Income Study (LIS).

The task of the members of the EGDNA was to produce disparity indicators for their countries using all the micro information available in each country. In parallel, Eurostat carried out an exercise at European level to match NA household accounts data with the harmonised micro information available within the ESS for all EU-27 members (plus EFTA). This Eurostat exercise was named the 'a-minima exercise' because it dealt with a limited set of information relative to the EGDNA, and was based largely on the European Union Statistics on Income and Living Conditions (EU-SILC) social statistics dataset.

For both component parts of the project, the work was carried out in two phases (see Table 1). In the first phase, carried out mainly in 2011, the concepts and methods for compiling micro and macro data on household economic resources were compared and, as far as possible, reconciled. In the second phase, which was completed in early 2013, NA data on household economic resources (mainly income and consumption) were broken down by groups of households at the relevant level. Imputation and correction were required for both data sources in order to obtain the breakdown and, eventually, to produce indicators of disparity.

The results from the first phase revealed a number of consistencies and discrepancies between the two datasets and provided valuable orientation for the direction of the subsequent phase of the exercise. It culminated in an agreement by the EGDNA on a common methodological template for the final phase. The template indicated, from the micro data perspective, which different groups of households should be identified and, on the macro side, which components of income and consumption should be disaggregated in the second phase.

Table 1: Development of the two exercises

Phase	Main Activity	Expert Group exercise	A-minima exercise	Period
		Variables		
1	Reconciliation of micro macro data sources	Income Consumption Wealth	Income	mainly 2011
2	Breakdown of macro data by groups of households	Income Consumption	Income	mainly 2012

As the Task Force recommended that the results of the European and the country specific exercises should be compared, Eurostat agreed to follow as far as possible the main EGDNA decisions on the method for carrying out the comparison.

The work of the EGDNA is complemented by that of another Expert Group looking at the same issue from a more methodological perspective. The OECD Expert Group on Household Income, Consumption and Wealth has two aims: (i) to develop the first set of recognised standards for the collection of micro statistics on household wealth, and (ii) to explore the consistency between these three components.

⁽²⁾ Austria Denmark, France, Spain, Germany, Italy, Netherlands, Portugal, Poland, Sweden, Slovenia, United kingdom, Switzerland, Australia, Canada, Chile, India, Israel, Japan, Korea, Mexico, New Zealand, Turkey and United States. Finland asked to be kept informed.

This report is organised as follows: the next section reports on the results of the a-minima exercises for the first phase of the exercise ⁽³⁾. Then, it describes the breakdown of NA household data on income for 3 household groups. The following section analyses the breakdown results obtained. And, finally, it concludes by exploring the lessons learned as well as listing ways of improving any future work in this area.

⁽³⁾ Results for the EGDNA exercise are collected in a specific double Working Paper edited by OECD and Eurostat that will be published shortly.

2. Reconciliation of EU-SILC and NA data

EU-SILC is a multi-purpose instrument launched in 2003, which focuses mainly on income. Detailed data are collected on income components. Inter alia, information on education and health is also obtained, as EU-SILC was established to provide data on structural indicators of social cohesion and to provide relevant data in the field of social inclusion and pensions in Europe.

EU-SILC provides two types of annual data:

- cross-sectional data, which are used in this exercise, pertaining to a given time or a certain time period with variables on income, poverty, social exclusion and other living conditions;
- longitudinal data pertaining to individual-level changes over time, observed periodically over a four-year period.

EU-SILC is not specifically a survey, rather it relies on the idea of a ‘framework’, specifically, the underpinning legislation defines only the harmonised lists of target variables to be transmitted to Eurostat; common guidelines and procedures; common concepts (household and income) and classifications aimed at maximising comparability of the information produced ⁽⁴⁾.

Definitions and guidelines for this data source can be found in the EU-SILC regulations and in the Eurostat website ⁽⁵⁾.

NA, the modern configuration for which was developed in the 1950s, are statistics focusing on the structure and evolution of national economies. They provide a framework for numerically describing and analysing, in an accessible and reliable way, the large number of economic interactions within an economy, included the operations related to the actor in which this work is interested: the ‘household sector’ ⁽⁶⁾.

In Europe, the international standards for national accounting are defined in the European System of Accounts (ESA). This exercise refers to ESA 1995 definitions ⁽⁷⁾.

This section is organised as follows: the next paragraphs describe the main differences between NA and EU-SILC concepts. Then, the section lists the income components analysed by the a-minima exercise and the adjustments and reclassifications carried out by Eurostat on these components. It describes and reports results on the numerical comparison between EU-SILC and NA data for a given year for 26 countries and the EU-27 aggregate. Finally, it draws conclusions from the first phase of the exercise.

2.1. Conceptual comparison

The a-minima exercise indicated five main general differences between the EU-SILC and NA datasets.

1) Differences related to the methodology used for collecting and processing the information required for producing final estimates. Whereas EU-SILC is a sample survey for which information is extracted either from registers or collected from interviews; NA data are the product of merging and complementing data coming from many different micro and macro data sources. In EU-SILC, imputations are performed typically to aggregate existing information (for example, to combine information on the individuals living in a household to produce a variable defining ‘household type’), or to correct the data surveyed. In NA, imputations are made to create new variables where data simply do not already exist (for example, in order to measure the hidden economy), and data corrections are adopted to reach internal consistency and exhaustiveness. Additionally, the objective of survey statisticians tends to be to ensure that each of the

⁽⁴⁾ For further the details see the link: http://epp.eurostat.ec.europa.eu/portal/page/portal/income_social_inclusion_living_conditions/introduction.

⁽⁵⁾ An exhaustive presentation of the EU-SILC variables and regulations is available respectively at these links: http://epp.eurostat.ec.europa.eu/portal/page/portal/income_social_inclusion_living_conditions/methodology/list_of_variables and http://epp.eurostat.ec.europa.eu/portal/page/portal/income_social_inclusion_living_conditions/legislation.

⁽⁶⁾ In NA the economy should be divided into five mutually exclusive institutional sectors: a) Non-financial corporations sector, b) Financial corporations sector, c) General government sector, d) Household sector and, e) Non-profit institutions serving households (NPISHs) sector.

⁽⁷⁾ A newer version will be put on in 2014: the ESA 2010.

variables surveyed are measured as well as possible. The objective of national accountants tends to be to ensure that the macro-economic indicators such as Gross Domestic Product are measured as well as possible, and the robustness of component parts is only important if they have a material effect on the totals (or are meaningful and useful in their own right).

2) Differences related to the reference population and the scope of the datasets. The reference populations of EU-SILC and NA coincide for the part that in EU-SILC is called 'private households'. EU-SILC surveys the members of all private households residing in the territory of Member State at the time of data collection. Therefore people living in collective households and in institutions are generally excluded from the target EU SILC population whereas they are included in the NA. An estimate of the percentage of the population excluded for most of the EU-27 and EFTA countries, based on the 2001 Census, is reported in Annex 2 which shows that the level of exclusions varies considerably across the EU. In this report, we refer to them with the term 'non-private households'. In addition, small parts of the national territory amounting to no more than 2 per cent of the national population and the national territories may be excluded from EU-SILC (for example, for France, the overseas territories).

From the NA side, six of the countries analysed in the a-minima exercise (Denmark, Germany, Ireland, Austria, United Kingdom and Switzerland) do not publish estimates for solely the household sector, but instead produce accounts for a sector which combines both households and Non Profit Institutions Serving Households (NPISHs), mainly because of the lack of sufficiently robust information on NPISHs.

3) Differences linked to statistical units and the amount of detail available in the two datasets. The EU-SILC data collection refers to personal and household information, but in EU-SILC only household members aged 16 and over are interviewed, so personal information is available only for people aged more than 15. At the gross income level (EU-SILC concept), only the variable 'income received by people aged under 16 years' is collected by EU-SILC. In contrast, NA makes no distinction by age; therefore a strategy is needed to deal with the income reported in EU-SILC for people less than 16 years old. Table 5 in Annex 2 presents the EU-SILC income variables mainly used for the a-minima exercise.

4) Difference linked to the income reference period. Whereas the EU-SILC income reference period is generally the year prior to the data collection ⁽⁸⁾ (note, though, that EU-SILC data refer to the household composition in the year of the survey), NA for a specific year refer to the income generated in that same specific year.

5) Difference due to the income concept. The income concept for EU-SILC is 'total household disposable income' for the 2009 EU-SILC data collection. This total household disposable income is the sum over all household members of gross personal income components plus gross income components at household level minus regular taxes on wealth, inter-household cash transfer paid and tax on income and social insurance contributions.

In NA, there are separate accounts showing primary and secondary income flows. These are, respectively, the income generated from production (for example, wages and salaries) and distributive income flows (for example, government taxes and social benefit payments).

The NA income concept adopted in this exercise is the balancing item of the secondary household sector income account. This is household disposable income and is presented as both disposable income and adjusted disposable income. The difference between the two is the sum of the individual goods and services provided as social transfers in kind (Stik) to individual households by government units and non-profit institutions serving households (NPISHs): the latter includes these whereas the former does not.

In the 2009 EU-SILC round, the variables which have been excluded ⁽⁹⁾, for methodological reasons, from the EU-SILC income concept (even if they are available in the EU-SILC dataset and are part of the NA income concept) are as follows:

⁽⁸⁾ For example EU-SILC 2009 data collection for Italy refers to income accrued in 2008. Ireland and United Kingdom are exceptions. In Ireland the income reference period is the last twelve months. In the United Kingdom the current income is annualised and aims to refer the current calendar year, i.e. weekly estimates are multiplied by 52, monthly by 12.

⁽⁹⁾ The content and concepts of EU-SILC may change at each new round of data collection, as the needs for information develop and change over time. The 2009 EU-SILC collection is the round chosen for the comparison. An example of a change in collection is that in the successive 2010 data collection, the variable "pensions from individual private plans", which is not included in the National Accounts income concept, was added to the EU-SILC income concept.

- ‘imputed rents’ and ‘value of good produced for own consumption’ (considered to be part of gross operating surplus plus mixed income in the NA)
- ‘non-cash employee income other than company cars’ (considered to be part of compensation of employees in the NA)
- ‘interest repayments on mortgage’ (considered to be part of property income paid in the NA).

As a final observation, the EU-SILC survey does include in the income concept some information for ‘housing allowances’ Stik, albeit of poor quality.

2.2. Income components and adjustments

The differences between EU-SILC and NA income components are reported in detail in Annex 2. In summary, the availability of micro information in EU-SILC allowed the study of the following NA income components ⁽¹⁰⁾:

1. Wages and salaries
2. Operating surplus plus mixed income
3. Property income received
4. Social benefits other than social transfers in kind received
5. Property income paid
6. Current taxes plus social contributions paid

In the NA framework, components 1-6 form disposable income and components whereas 1-6 plus Stik form adjusted disposable income.

Before comparing micro and macro totals, it was necessary to apply adjustments and to reclassify data in an attempt to ensure the greatest consistency between the EU-SILC and NA household income aggregates. Due to restrictions in data availability, the set of adjustments made was fairly small.

On the macro side, prior to the calculation of coverage rates, two types of adjustment were made to NA data:

- (i) correcting the NA scope by deducting the income generated by NPISHs, when needed; and
- (ii) ignoring the NA components that are not covered by micro sources, that is, ‘Investment income attributable to households’ and Financial Intermediary Services Indirectly Measured (FISIM) for both interest received and paid.

On the micro side, EU-SILC income was adjusted in order to obtain the best match with NA data. Table 2 reports the details of the micro–macro matching of EU-SILC and NA variables carried out.

In brief, the main reclassifications in EU-SILC were:

- a) including the whole of non-cash employee income rather than only the value of company car benefits (due to the fact that in the EU-SILC income concept for wages and salaries in kind, only the latter item is included)
- b) the introduction of imputed rents and of the value of goods produced for own consumption (due to the fact that in the EU-SILC income concepts, those variables are excluded); and finally
- c) estimating the split for income from rental of a property of land into ‘income from self-employment and from dwellings’ and ‘interest and distributed income received’.

⁽¹⁰⁾ Definitions and National Accounts codes are available in Annex 2.

2.3. Empirical comparison

Once the adjustments described above were made, the detailed make-up of NA and EU-SILC components was compared. Table 2 sets out the differing component descriptions. In order to help identify how good the match between EU-SILC and NA is, a coverage rate (CR) is calculated, which is the ratio of the EU-SILC component to the NA one.

These coverage rates are calculated for a given income year (2008). The coverage rate by component shows the extent to which the total amounts from the EU-SILC and the NA match with each other, when using similar definitions (to the extent possible) and after having made adjustments for 26 countries out of the 31 EU and EFTA members and for the EU-27 as a whole.

More precisely, coverage rates were estimated for 24 members of the EU-27 (Belgium, Czech Republic, Denmark, Germany, Estonia, Ireland, Greece, Spain, France, Italy, Cyprus, Latvia, Lithuania, Luxembourg, Hungary, Netherlands, Austria, Poland, Portugal, Slovenia, Slovakia, Finland, Sweden, United Kingdom) and, for 2 of the 4 EFTA countries (Norway and Switzerland). Five countries (Bulgaria, Malta, Romania, Iceland and Lichtenstein) were excluded because of lack of information on one or both the datasets ⁽¹⁾.

Table 2: Comparison pattern between National Accounts and EU-SILC

Income component	National Accounts (reduced scope)	EU-SILC
Wages and salaries	* Wages and salaries (in cash and in kind)	* Gross cash or near-cash employee income * Gross non-cash employee income * Income received by people aged under 16
Operating surplus + mixed income	* Operating surplus and mixed income	* Gross cash profits or losses from self-employment (including royalties) * Value of goods produced for own consumption * Imputed rent * Part of income from rental of a property or land
Property income received	* Property income received minus FISIM allocated minus property income attributed to insurance policy holders	* Interest, dividends, profits from capital investment in an unincorporated business * Part of income from rental of a property or land
Social benefits in cash	Social benefits other than social transfers in kind	* Family/children-related allowances * Unemployment benefits * Old-age benefits * Survivors' benefits * Sickness benefits * Disability benefits * Education-related allowances * Social exclusion not elsewhere classified
Property income paid	* Property income paid minus FISIM allocated	* Interest paid on mortgage
Current taxes + social contribution paid	* Current taxes * employees' social contributions * social contributions by self- and non-employed persons	* Tax on income * Regular taxes on wealth * Social insurance contributions

⁽¹⁾ More precisely:

1. Bulgaria and Romania supplied National Accounts data after the performing of the first phase of the exercise; they were then included in the second phase only;
2. though present in the EU-SILC database, National Accounts data for Malta and Iceland are insufficient for the comparison scope;
3. Liechtenstein does not produce both datasets for the income year chosen.

The following formula describes mathematically the calculation of the coverage rates for each NA income component x and country z :

$$1) \quad CR_{x,t} = \frac{EU - SILC_{x,z_weighted_total}}{NA_{x,z}} * 100$$

where the weighted total of the formula refers to variables grossed-up to the EU-SILC target population.

To calculate the coverage rates for the six countries that publish accounts for the combined household plus NPISHs sector ⁽¹²⁾, an experimental procedure is applied to deduct the income generated by NPISHs to arrive at an estimate for the household sector only. This experimental procedure is described in Annex 5.

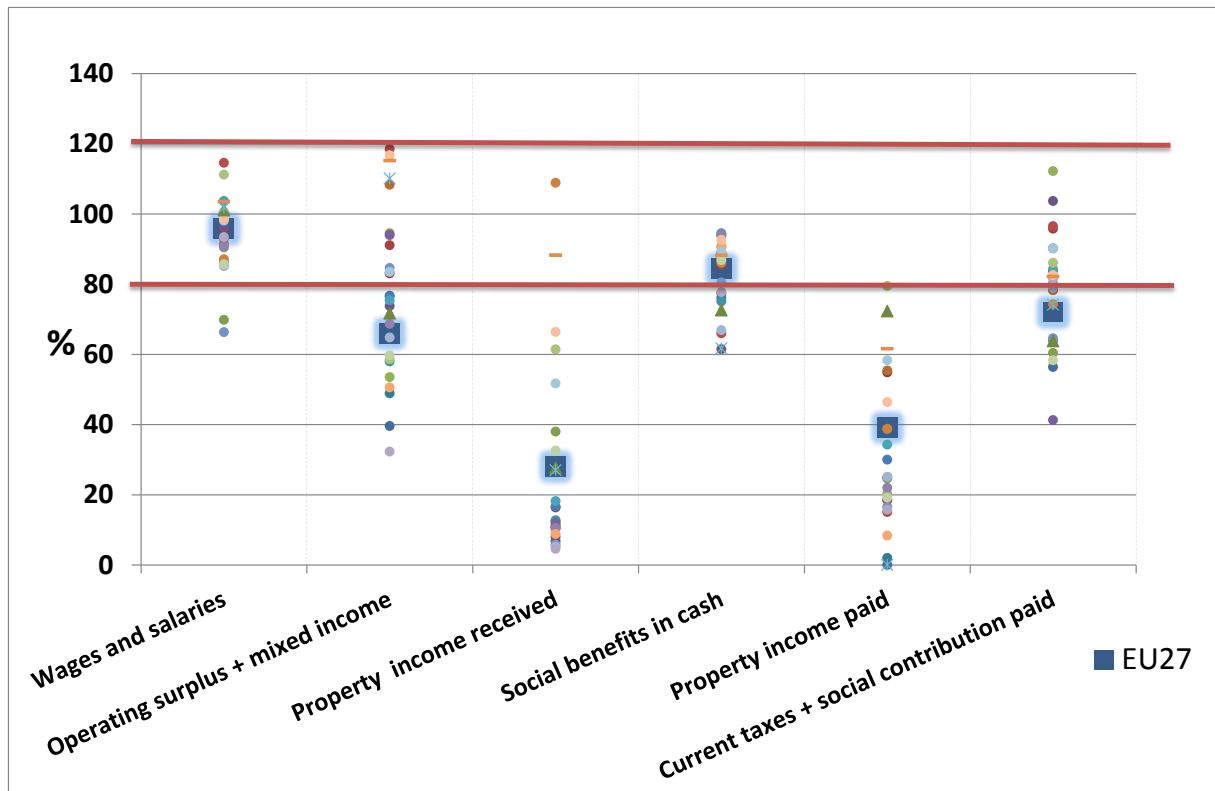
The EU-27 coverage rates have been calculated on the basis of the European NA aggregates produced by Eurostat. As these European aggregates cover both the joint households and NPISHs sectors combined, an estimate of the value of the NPISH part has been removed using the experimental procedure mentioned above. The household sector-only income aggregates are then compared to the EU-SILC totals.

⁽¹²⁾ With two exceptions: Austria and Switzerland do publish separate estimates for the household and NPISHs sectors for a limited number of income components.

2.4. Results of the comparison and lessons learned

The coverage rates for the EU-27 aggregates are shown in Figure 1 and Table 3. As a very first approximation and as in the EGDNA, coverage rates between within 80 and 120 per cent are taken to have a reasonably fair degree of alignment between micro and macro totals.

Figure 1: Coverage rates by country and by National Accounts component (2008)



Notes: – Italian data for operating surplus + mixed income include a part of property income whereas property income received data exclude the same amount (Annex 2).
 – Property income data exclude the NA adjustment for FISIM for countries that supplied this information.
 – Social contributions in current taxes +social contributions do not include employers' social contributions.

Consequently, at the EU-27 level, the results of the comparison of NA and EU-SILC data are as follows:

- fair degree of alignment between the micro and macro totals for wages and salaries and social benefits in cash (CR in the range 80 to 120 per cent)
- moderate degree of alignment for operating surplus plus mixed income and current taxes plus social contributions paid (CR in the interval 60 to 80 per cent)
- limited degree of alignment for property income on both the resource and use sides (CR smaller than 60 per cent).

Table 3: Coverage rates by country and by National Accounts component (2008)

<i>Wages and salaries (%)</i>		<i>Operating surplus + mixed income (%)</i>		<i>Property income received (%)</i>		<i>Social benefits in cash (%)</i>		<i>Property income paid (%)</i>		<i>Current taxes + social contribution paid (%)</i>	
EU27	95.7	EU27	65.9	EU27	28.1	EU27	84.3	EU27	39.2	EU27	72.0
HU	66.3	LU	32.3	SI	4.6	EL	61.5	DE	0.0	LT	41.3
IE	69.8	FI	39.6	SE	5.2	CH	61.7	CH	0.0	DE	56.4
FR	85.1	AT	48.9	IE	5.8	CY	66.0	CZ	2.0	SI	58.3
PT	85.7	DK	50.6	DK	6.8	PT	66.9	PL	8.4	IE	60.4
LV	85.9	IE	53.5	EL	8.0	UK	72.6	EE	15.1	UK	63.8
CZ	86.0	PT	58.0	UK	8.8	ES	75.1	SK	15.7	ES	63.9
SI	87.1	SI	58.6	PT	10.5	CZ	76.1	HU	16.5	HU	64.6
SK	90.4	EE	59.7	NL	10.6	BE	77.4	CY	18.4	CH	74.1
UK	90.7	BE	64.8	BE	10.7	SK	77.7	EL	18.6	FR	74.3
EL	91.4	PL	68.7	AT	11.1	HU	80.5	SI	19.2	CZ	78.3
EE	93.1	UK	71.7	FR	11.1	EE	85.6	LV	20.2	DK	78.3
CH	93.4	ES	73.8	PL	11.8	FR	86.1	AT	22.0	PL	79.0
ES	95.9	EL	75.4	LV	12.4	DK	86.3	IE	24.6	PT	79.0
DE	96.4	NL	76.5	NO	12.7	SI	86.8	LT	25.0	AT	80.2
BE	97.6	DE	76.7	ES	16.4	NO	88.2	PT	25.1	SK	81.5
NL	98.1	LT	83.1	DE	16.6	LT	88.8	IT	30.0	NO	82.2
LU	98.3	HU	83.5	LT	18.2	IT	89.0	LU	34.3	SE	82.6
IT	98.6	CZ	84.6	EE	27.0	FI	89.2	ES	38.7	BE	83.9
AT	100.6	SK	91.1	CY	27.7	LV	90.6	FR	38.8	LU	84.2
PL	101.1	LV	94.0	LU	32.6	NL	90.6	SE	46.4	NL	86.1
CY	101.8	FR	94.5	IT	38.0	PL	90.8	BE	54.9	IT	90.2
FI	103.5	IT	108.3	CZ	51.7	SE	92.6	DK	55.4	FI	90.2
DK	103.6	CH	110.1	FI	61.4	DE	93.8	FI	58.3	EE	95.8
SE	103.6	NO	115.2	SK	66.4	AT	94.1	NO	61.6	CY	96.5
NO	111.2	SE	116.7	CH	88.3	LU	94.4	UK	72.3	EL	103.7
LT	114.6	CY	118.5	HU	108.9	IE	94.5	NL	79.5	LV	112.2

Notes: – Italian data for operating surplus + mixed income include a part of property income whereas property income received data exclude the same amount (Annex 2).
– Property income data exclude the NA adjustment for FISIM for countries that supplied this information.
– Social contributions in current taxes +social contributions do not include employers' social contributions.

One of the final targets of this work is to obtain summarised information on the matching of EU-SILC data with NA aggregates, including disposable income, that by definition are calculated by adding or subtracting the individual income components.

At the level of NA aggregates, a simple coverage rate can be of little help in quantifying the extent of the match between EU-SILC and NA because of the possibility of some income components with a large negative difference offsetting other income components with a positive difference.

To quantify differences at the level of NA aggregates, the EGDNA defined the 'average gap indicator'. This indicator is computed as weighted average of the differences between the micro and macro amounts across the different components of the NA aggregate.

With the same notation as used for coverage rates, the average gap indicator AGI for the country z is calculated as follows:

$$2) \quad \text{AGI}_z = \sum_{x=1}^k \frac{|NA_{x,z}|}{\sum_{x=1}^k |NA_{x,z}|} * D_{x,z} * 100;$$

Where

1. the NA aggregate is made up of a given number of components 'k'.
2. $D_{x,t} = \text{Min} \left\{ \left| 1 - \frac{CR_{x,z}}{100} \right|; 1 \right\}$ is a factor that for practical reasons counts as uncovered the NA components with coverage rate higher than 200 per cent.
3. and the $\frac{|NA_{x,z}|}{\sum_{x=1}^k |NA_{x,z}|}$ is the weight for the NA component x.

To analyse coverage at the level of NA income aggregates, the average gap indicator is calculated by using two different NA reference aggregates (Figure 2):

- (i) adjusted disposable income because reconciling micro data on income with national accounts income is the goal of this exercise
- (ii) a derived NA income aggregate defined by the availability of those 6 components that are available from EU-SILC.

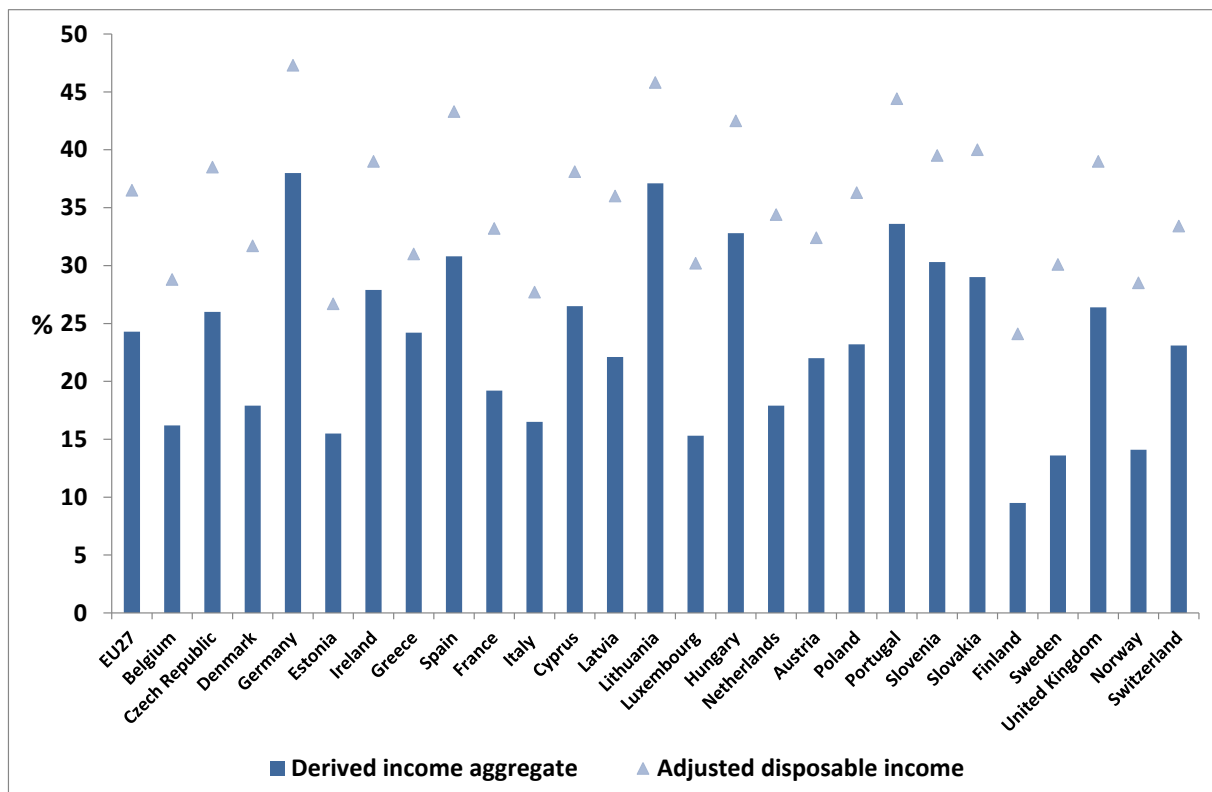
Looking at the global indicator for adjusted disposable income aggregate, the findings are as follows:

- the AGI is 36 per cent for the EU-27 as a whole
- the indicator is between 20 and 40 per cent for twenty-one countries: Belgium, Czech Republic, Denmark, Estonia, Ireland, Greece, France, Italy, Cyprus, Latvia, Luxembourg, Netherlands, Austria, Poland, Slovenia, Slovakia, Finland, Sweden, United Kingdom, Norway, Switzerland
- and finally, five countries have a poorer gap but lower than 50 per cent: Germany, Spain, Lithuania, Hungary, Portugal.

Looking at the derived income aggregate, the AGI is understandably poorer because its calculation excludes all the NA pieces of information that are not covered in the EU-SILC data. The average gap indicator results are:

- 24 per cent for the EU-27 as a whole
- lower than 20 per cent for ten countries: Belgium, Denmark, Estonia, France, Italy, Luxembourg, Netherlands, Finland, Sweden, Norway; and
- between 20 and 40 per cent for the remaining sixteen countries: Czech Republic, Germany, Ireland, Greece, Spain, Cyprus, Latvia, Lithuania, Hungary, Austria, Poland, Portugal, Slovenia, Slovakia, the United Kingdom and Switzerland.

As the social transfers in kind component accounts on average for 19 percent of adjusted disposable income in 2008, the fact that the AGI is lower for the adjusted disposable income aggregate than it is for the derived income aggregate is mainly because this component is not covered well at all in EU-SILC.

Figure 2: Average gap indicator for NA income (2008)

In its first phase, the a-minima exercise addressed the comparison between EU-SILC and NA data.

To recap, in phase 1, the definitions for EU-SILC and NA data were compared in order to understand their respective content and any differences. Then, a set of adjustments/reclassifications were applied to both the micro and macro data to make them closer in content. However, some gaps such as the non-common scope (mainly non-private households) between the micro and macro data sources were partially dealt with.

Finally, EU-SILC variables for NA components were identified and compared with NA data at the country level for the core income components to obtain the coverage rate, which is a measure of the match between EU-SILC information and NA.

The main outcome of this conceptual and empirical comparison performed at a centralised level is the understanding that EU-SILC results show a certain distance from NA figures. And in this respect, three main issues appear.

Firstly, as TF-HP recommended, the NA scope should be reduced to private households. NPISHs have been already excluded from those countries that publish NA data only for the combined sector. However, the scope should be further reduced for non-private households. It should be said that the inclusion of non-private households in NA has a different effect in different countries and on different income components and could explain some of the variation between countries and components in the coverage rates and average gaps discussed above.

Secondly, the very low coverage rates for property income mean that this is the weakest component in the comparison of the two data sources. Income from self-employment and direct taxation levied on households are the next-weakest components and are important because of the high variability between countries, especially for self-employment income.

Finally, the breakdown of social transfers in kind is needed in order to render the disparity indicators more comparable across countries and to reduce the gap between NA and EU-SILC data.

3. Breakdown of household accounts data by household groups

Data for the household sector in NA are often presented as totals for the whole population living in a territory, such as a country and/or the regional units of a country. Income information distributed by socio-economic variables is available from micro data sources but it does not tend to be consistent with the NA data.

This work attempted to break down NA totals into subtotals for population subgroups that correspond to the values of various socio-economic variables. An illustrative example of this is given in the next box.

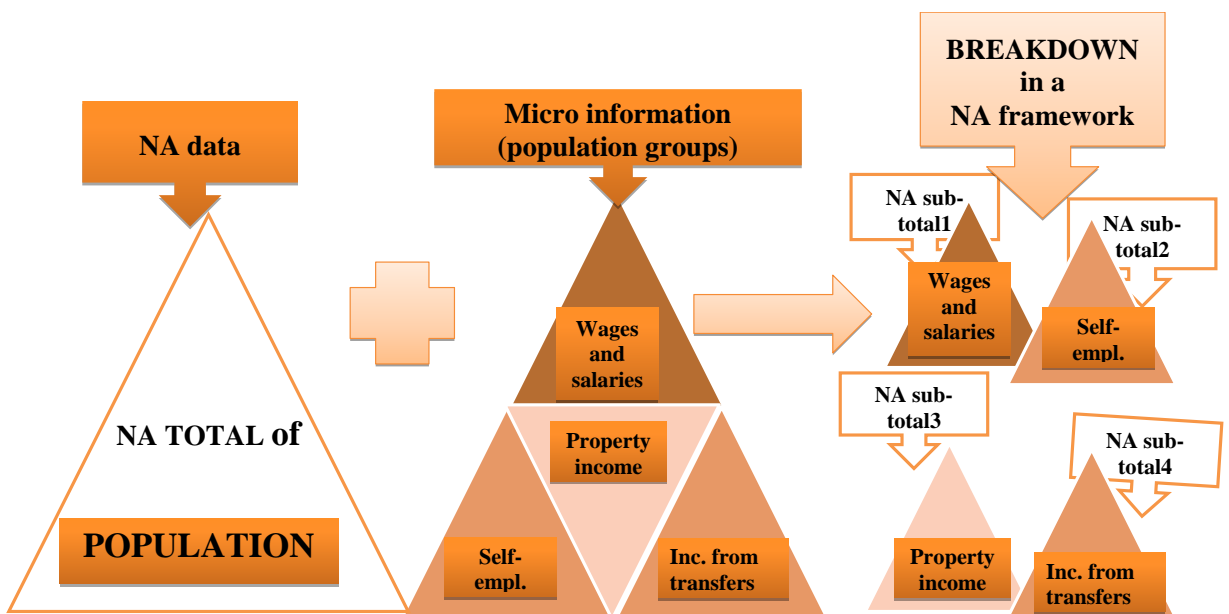
Box 1: An example of breakdown of NA data by subgroup of households

The variable 'main source of income' has four categories:

1. wages and salary
2. self-employment income
3. property income
4. income from transfers.

In order to split a NA household income component by main source of income, the population of households is allocated to one of these four different categories in the microdata source according to whichever is the largest source of income. Four subgroups of the population are hence formed.

Figure 3: From National Accounts total to subtotals



By using the available information from micro and macro data, in the breakdown process a NA income measure (subtotal) for each of four subgroups is obtained.

As the EGDNA was charged with devising an internationally-agreed methodology for the breakdown of NA totals into subtotals by household subgroup, Eurostat collaborated in developing a joint methodology and applied it, in the a-minima exercise.

As agreed in the EGDNA, the a-minima breakdown was carried out in four steps:

1. Scope adjustment of NA totals
2. Imputation of NA components that are not (sufficiently) covered by microdata sources
3. Measurement of classification variables in the micro data source to create household groups
4. Breakdown of NA (adjusted) totals in subtotals by household groups

Each of the next four paragraphs represents one of these steps as carried out by the a-minima exercise. The next two paragraphs provide a description of adjustments applied to both the NA and EU-SILC data to cope with the main issues that were identified in the first phase (steps 1 and 2): adjustment of the scope of NA totals and imputation in EU-SILC of NA components not (sufficiently) covered. Then, the section describes the classification variables adopted in the project and their measurement in the EU-SILC data to create household groups (step 3). Finally, it presents the procedure followed to distribute NA totals into subtotals (step 4).

3.1. Adjustment of the scope of National Accounts totals

In the first phase of the exercise, it became clear that NA data cover all households resident in the territory whereas EU-SILC data cover only private households.

By regulation, the people living in the following types of accommodation are excluded from EU-SILC reference population:

- boarding house, dormitory in an educational establishment or other living quarters shared by more than five persons without sharing household expense
- households with more than five lodgers (if lodgers)
- retirement homes, healthcare institutions, religious institutions (convents, monasteries), correctional and penal institutions.

This population is included in the NA scope, and their income can appear to different extents in different income components, for example elderly people living in retirement homes can impact more on social benefits in cash because of their old-age pension than on other NA income components.

As the impact of non-private households changes according to the NA component, to improve the consistency of the scope between NA and EU-SILC data, Eurostat opted to reduce the scope by component.

To perform the scope reduction of NA for non-private households, Eurostat made use of the following information:

- data from the 2001 Census on ‘person living in an institutional household’ and ‘person living in a private household’⁽¹³⁾ by age class
- demography data for 2008 for total population by age class
- per capita value of EU-SILC income variables calculated under specific assumptions by age class.

This reduction in the scope of the NA was applied consistently to all countries in the a-minima exercise except for Italy, for which a variant on non-registered immigrants’ employment was introduced to improve the adjustment using extra information available from Italy⁽¹⁴⁾ (Annex 6).

Briefly, it was assumed that those living in non-private households received the same income as those living in private households. Accordingly, the per capita value of the EU-SILC income variables for those living in private households was applied to Census data with an age breakdown in order to estimate an ‘EU-SILC’ amount for people living in non-private households. This amount was then added to the EU-

⁽¹³⁾ The Census definition of institutional households is generally different from the EU-SILC definition. In this exercise we have had to assume that they are similar because this is the only source of information available on people living in this kind of accommodations. To simplify, within this framework we adopt the following terminology: "private households" are the ones in the EU-SILC scope and "non-private households" refers to the remaining part of population.

⁽¹⁴⁾ The applicability of a similar correction to the remaining countries would need to be verified as each country has its own peculiarity with respect to the phenomenon of non-registered immigration.

SILC weighted total values to obtain an adjusted total for the whole population living in the territory. Then, the share of 'EU-SILC' non-private households was calculated as a ratio of the EU-SILC adjusted totals. Finally, this share was applied to NA totals. A complete description of this adjustment is in Annex 6.

The Census does not provide sufficient information to be able to distinguish the kind of accommodation of people living in non-private households. This would have added more precision to the estimate as some types of income are seldom received by people living in certain accommodations such as, for example, wages and salaries for individuals that are in prison.

Figure 4 presents the (estimated) share of Non-Private Households in NA totals by main income component and aggregates by country.

This Figure shows that the share of non-private households' income in the NA aggregate is different for each component and shows that at the level of adjusted disposable income, the estimated share for non-private households is 1.6 per cent of the NA total for the EU-27 aggregate. The country with the lowest non-private households share is Bulgaria (0.3 per cent) and the highest is Switzerland (4.5 per cent).

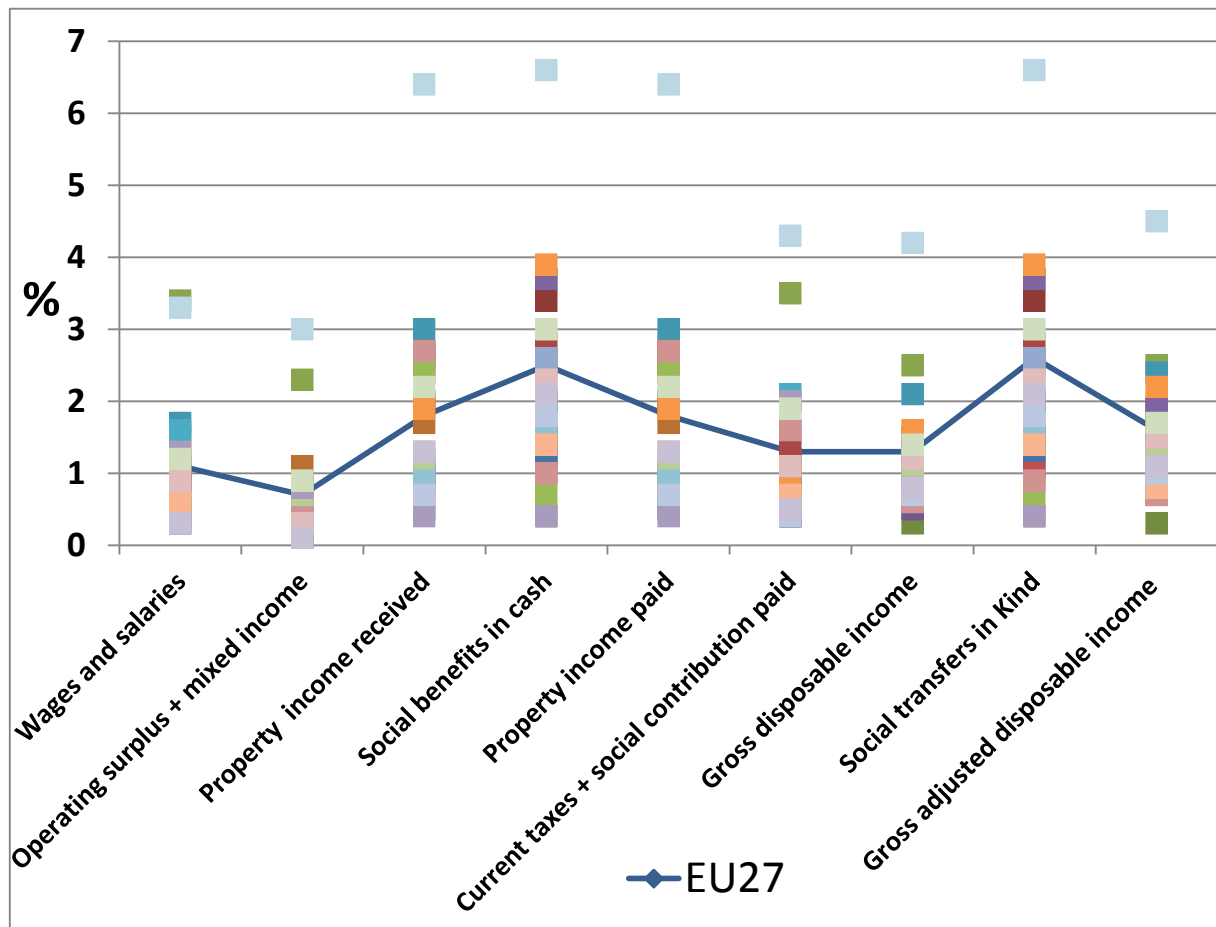
At the level of aggregate income, the results depend on the percentage of people reported as living in non-private households from the demography statistics.

The a-minima scope reduction for non-private households was calculated using 2001 Census data but applied to 2008 income figures. If in the meanwhile, the percentage of the population living in non-private households has changed, these results are out-of-date ⁽¹⁵⁾.

Not only would it be beneficial to update the Census data, but also integrating this information with additional sources that split people living in non-private households by kind of accommodation could help to improve this estimation.

⁽¹⁵⁾ Already during the activity of the EGDNA, the expert from Switzerland verified with annual data available in its country that the Census results for 2001 were out-of-date for working with the year 2008.

Figure 4: Estimated share of non-private households in National Accounts totals by income component



Note: Shares have been estimated after the adjustments on NA totals performed in the first phase of the exercise.

3.2. Imputations on the EU-SILC data

3.2.1. Social transfers in kind

To be able to compare data across countries better, the goods and service supplied free or at very low prices to households by General Government and by NPISH should be taken into account, as the extent to which households benefit from these services (as well as the mix of different services) differs from one country to another.

The a-minima exercise has had to impute the value of consumption of social transfers in kind in the EU-SILC dataset as direct information on this income component is not collected in this micro dataset. In the limited timeframe of this exercise, the scope of the exercise was restricted to the most important components of Stik: publicly-provided or funded education and health/sickness good and services, which are among the highest General Government expenditure items ⁽¹⁶⁾.

This imputation, detailed below, has been made at the individual level for all people living in the household. The analysis of results is instead limited to the impact of this income component on the

⁽¹⁶⁾ Even if extending the analysis to social transfers in kind produced interesting results in this exercise, this is not the place to discuss deeply their imputation at the micro level. Specific literature is available on the subject and it is quoted extensively in Verbist et al (2012) at the link http://www.oecd-ilibrary.org/social-issues-migration-health/the-impact-of-publicly-provided-services-on-the-distribution-of-resources_5k9h363c5szq-en. In addition, Eurostat is currently carrying out a project to estimate the value of social transfers in kind in household surveys that aims at improving income distribution statistics. More information on the project and its results will be soon available on the European Commission website.

breakdown results (§4).

Neither source provides sufficient information to estimate the value of Stik directly.

In the NA, an amount for these components it is not available within the household sector, but instead the reference totals for this component are the general government final individual consumption expenditure on the health care and education functions (COFOG).

Currently, EU-SILC does not provide sufficient information to permit a distinction to be made between:

- people that benefit from social transfers in kind or pay privately their education/health care
- whether individuals were ill and actually used health care services
- if children are in education for certain age classes.

The method followed by the a-minima is therefore based on strong assumptions.

3.2.1.1. Insurance approach for health care

This exercise used an insurance approach and imputed the benefits to households from public health care goods and services by means of additional information on age-gender profiles for expenditure in health care.

An insurance approach means that the value of health care Stik that is allocated to an individual (rather than a household) is taken as the equivalent of what might be the insurance premium that the same individual would pay if a fully-functioning market existed. In an insurance approach, all individuals receive health care Stik. A similar approach is common in the literature and has been followed, for example, by Verbist et alii (2012).

The age-gender profiles are collected for use in a projection exercise regularly performed by DG ECFIN with the EPC Ageing Working Group (AWG) to study the sustainability of public finances. They are estimated from national sources and are provided directly by the Member States through the AWG.

In the a-minima exercise, the information on health expenditure (the age-gender profiles) has been distributed to household survey recipients according to the information on age and gender in EU-SILC.

The a-minima exercise firstly produces a preliminary estimate of health social transfers in kind for each individual in the sample.

These preliminary estimates are then adjusted to make sure they are fully consistent with the total benefits in kind for the sickness/health function as reported in estimates of final individual consumption expenditure on the health care function (COFOG). This adjustment takes the simple form of pro-rating to the COFOG total.

3.2.1.2. Consumption approach for education

The a-minima exercise adopted a consumption approach for education and used additional information from the UNESCO/OECD/Eurostat (UOE) data collection. This is called a consumption approach in the literature because the value of education Stik is allocated to only those individuals that actually use education services.

As the costs associated with the different levels of education are markedly different, the a-minima exercise differentiated between ISCED levels⁽¹⁷⁾ to take into account of some of the differences in consumption.

Information on per student public expenditure on education by ISCED level are hence allocated to individuals using information on age and level of education as reported in EU-SILC data.

For the year 2008, UOE data on public expenditure per student by ISCED level based on full equivalent units are quite extensive for the countries targeted by the European experiment. Missing information on ISCED level is replaced with the closest information available in the country involved. For example, if data on expenditure per student were missing for a specific ISCED level, the value of expenditure (per

⁽¹⁷⁾ The International Standard Classification of Education (ISCED) is a statistical classification for organising information on education maintained by the United Nations Educational, Scientific and Cultural Organization (UNESCO).

student) for the immediate higher ISCED level was taken as an estimate of the missing information.

From the EU-SILC, the following pieces of information are available:

1. ISCED level currently followed (for people 16-year and over)
2. the latest ISCED level reached and the year this qualification in education takes place
3. whether a child follows a pre-school or a compulsory course (for children up to 12 years old).

EU-SILC does not provide information on the level of education followed for children of age 13-15. However, from information on participation at school available from the UOE database, it appeared that in Europe almost 100 per cent of children of this age class were in education. This exercise assumes therefore that all such children were in education.

In order to impute the education level for this class of children (and, for that matter, whenever the level of education was missing in EU-SILC data), the level most probably followed by a person of the corresponding age and country in the reference year was taken. This latter information has been produced using average data on number of students by ISCED level and age by country from the UOE database.

Once people in education were identified and assigned with an ISCED level, the corresponding expenditure per student was imputed in the EU-SILC sample in order to get a preliminary estimate of social transfers in kind for education.

The imputation was finalised by making the preliminary estimate consistent with the total general government final individual consumption expenditure in the education function from COFOG, by prorating.

3.2.2. Transfers between households

At the level of NA totals, transfers between resident households are consolidated, and do not appear as a separate item. However when subgroups are introduced, economic transactions between the subgroups need be accounted for.

In the a-minima exercise, the component transfers among households was imputed in NA data by considering the information on these transfers that is available in EU-SILC.

Estimates were obtained by calculating the average household transfers for the following two EU-SILC variables together:

- Regular inter-household cash transfers received
- Regular inter-household cash transfers paid.

This method for taking into account the cash transfers between households has, from one side, the advantage of being extremely simple but, from the other it should be further improved because it does not take into account cash transfers between resident and not resident households and between private and non-private households ⁽¹⁸⁾.

3.2.3. Property income

Among the NA income components targeted by the a-minima exercise, property income on both the use and the resource side has the EU-SILC term of comparison with the lowest coverage rates with the exception of few countries (Figure 1 & Table 2).

Three kinds of problem affect the comparison of data on property income ⁽¹⁹⁾:

1. the difficulty of including in the micro data collection sample the highest incomes, (it results in underestimation of property income) while the NA have at its disposable information on totals coming from the counterpart sectors
2. large differences in content and definition of the two sources

⁽¹⁸⁾ A similar estimation carried out by France took into accounts all the different kinds of households and produced an estimate of transfers between households by using information coming from the Household Budget Survey (see Bellamy et al. 2009).

⁽¹⁹⁾ Further details on problems issues linked to property income are provided in Annex 2.

3. the adjustments adopted in the NA methodology to reach internal consistency and exhaustiveness.

To deal with these low coverage rates Eurostat followed, as far as possible according to the available information, the method proposed by Bellamy et al. (2009) and looked for an additional micro data source to impute property income in the EU-SILC sample.

For the limited timeframe of this exercise, this additional information was analysed and used for only one country. The country selected was Italy, which does have coverage problems for property income and for which data from the Bank of Italy's Survey on Household Income and Wealth (BI_SHIW) are published. This survey was used because part of the forthcoming Eurosystem's Household Finance and Consumption Survey (HFCS) launched by the ECB that will produce similar data for the Euro Area members⁽²⁰⁾.

The Bank of Italy survey reports indirect information on property income that has been derived from data on financial assets and liabilities. The match (as defined using the coverage rate calculation used elsewhere in this project) between these latter data and NA is greater than the match between EU-SILC and NA. Therefore, these Bank of Italy data have been used to impute micro information on property income.

The per-household average share of financial assets/liabilities by groups of households was estimated in the Bank of Italy survey and thus imputed to the corresponding EU-SILC groups of households. Finally, the share was applied to the NA estimates of property income. The technical description of the method adopted is in Annex 3.

Even if this imputation is straightforward and easy to replicate, it should be noted that several assumptions are required to be made and that it does not necessarily paint a picture of reality but only serves to distribute the value of the NA item across the EU-SILC sample on the basis of the supplementary information provided by the BI_SHIW.

At the moment, this imputation is the best (or the least bad) of the available alternatives, such as distributing property income equally across households or in proportion to the amount that they have already declared in the EU-SILC survey. As the ECB Household Financial and Consumption Survey should provide more accurate results for more countries, this could lead to better estimates for the whole Euro Area.

3.3. The classification of variables

EGDNA members and the a-minima exercise worked with the household as the unit of the analysis and split the information and consequently the reference household population by groups based on the following variables:

1. household type;
2. main source of income; and
3. equivalised disposable income quintiles.

The *household type* variable classifies households on the basis of the presence, number and age of members of the household.

Eight household types are distinguished: a) Single person under 65; b) Single person aged 65 and over; c) One adult with 'children living at home', whatever the age of the adult; d) Two adults both under 65 and without 'children living at home'; e) Two adults with at least one aged 65 and over, and without 'children living at home'; f) Two adults with less than three 'children living at home' whatever the age of the adults; g) Two adults with at least three 'children living at home' whatever the age of the adults; h) Other household types.

In this classification the concept of 'children living at home' corresponds to all those individuals who are

⁽²⁰⁾ Wide documentation on HFCS is available on the ECB website at the following link:
http://www.ecb.int/home/html/researcher_hfcn.en.html.

Further information are in two reports annexed to the data dissemination: HFCN (2013a), "Report on the results for the first wave" e HFCN (2013b), "Methodological report for the first wave", Eurosystem Household Finance and Consumption Survey Reports in website too.

aged 16 plus the individuals that are between 17 and 24 years and are offspring of one of the household members and are living at home. All other members are classified as adults and they are distinguished as either old or young according to whether they are 65 and over or younger.

The *main source of income* classification variable has four household groups according to the main source of income of the household as a whole: a) wages and salaries, b) income from self-employment; c) property income; d) current transfers received.

The main source of income classification variable is constructed as follows: for each household, the amount corresponding to each source of income is calculated, and the household is classified according to the largest of these sources. While for some studies, household income less than zero is set to zero, the EGDNA has decided to make no such adjustment.

The *equivalised disposable income quintile* classification is based on five equal groups (quintiles), each of them containing 20 per cent of the number of households

Each household is classified to the quintile based on its whole income. The income is equivalised in order to reflect differences in a household's size and composition. Equivalisation takes the form of dividing total household income by the number of 'equivalent adults', using a standard (equivalence) scale. The EGDNA used the Oxford modified scale ⁽²¹⁾.

This scale, also known as the modified OECD scale, gives a weight to all members of the household as follows: 1 for the first adult; 0.5 for each of the other adults; 0.3 for each child (person aged under 14). These are then added up for all members of the household to arrive at the equivalised household size.

3.3.1. The income concept for the classification variables

With the aim of keeping as close as possible to households' own perception of their own income, the concept of income underpinning the definition of the last two classification variables in the micro sample is a cash or near-cash concept closer to the micro income concept than to the NA definition and comes from 'the Canberra Handbook on Household Income Statistics' ⁽²²⁾.

In practice, this income concept allows experts performing the exercise to start by using data from the micro sources. As such, in-kind services and other items not collected but indirectly calculated by the micro data compilers (including Stik, employers' social benefits and imputed rents) are excluded from the process of building classification variables. The cash income concept is detailed in Annex 4. The EU-SILC variables adopted for these income classification variables are listed in Box 2.

3.4. Breakdown of National Accounts data by groups of households

3.4.1. National Accounts working components

Due to the limited set of information available from the dataset collected by Eurostat, the income working components analysed in this exercise are as follows:

1. Wages and salaries
2. Operating surplus + mixed income
3. Property income received
4. Social benefits received
5. Property income paid
6. Current taxes + social contributions paid
7. Social transfers in kind
8. Disposable income

⁽²¹⁾ Information on equivalised income is available at http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Glossary:Equivalised_disposable_income.

⁽²²⁾ The Canberra Handbook is available at the following link: http://www.unece.org/fileadmin/DAM/stats/groups/cgh/Canberra_Handbook_2011_WEB.pdf.

9. Adjusted disposable income.

EU-SILC provides direct information for the first six components. The seventh was imputed and the last two are sums of the other components (1 to 6 and 1 to 7 respectively). Definitions and NA codes are detailed in Annex 2.

Eurostat was not able to apply fully the EGDNA methodology because of NA components not being collected centrally by Eurostat and therefore not being available for the a-minima exercise. In most cases these components are actually produced by each country and could be added to the dataset collected by Eurostat without seriously overcharging the data producers in each country.

Box 2: EU-SILC variables used for the grouping by main source of income and by equivalised disposable income quintile

This box lists the EU-SILC information used to produce the classification variables based on income:

Main source of income

1. *Wages and salaries:*
 - a) Gross cash or near-cash employee income
 - b) Gross non-cash employee income
 - c) Income received by people aged under 16.
2. *Income from self-employment:*
 - a) Gross cash profits or losses from self-employment (including royalties)
 - b) Value of goods produced for own consumption
 - c) Income from rental of a property or land (part).
3. *Property income net:*
 - a) Interest, dividends, profits from capital investment in an unincorporated business
 - b) Income from rental of a property or land (part).

Current transfers received:

- a) Regular inter-household cash transfer received
- b) Pension from individual private plans
- c) Family/children-related allowances
- d) Unemployment benefits
- e) Old-age benefits
- f) Survivors' benefits
- g) Sickness benefits
- h) Disability benefits
- i) Education-related allowances
- j) Social exclusion not elsewhere classified.

Equivalised disposable income quintile

The sum of all the variables listed above minus the value of the following:

- a) Regular taxes on wealth
- b) Tax on income and social insurance contributions
- c) Regular inter-households cash transfers.

The extra NA components that it would be useful to include in the centralised data collection are:

- Imputed social contributions
- Mixed income (excluding adjustment for underground production and own account production)
- Mixed income from underground production
- Mixed income from own-account production
- Operating surplus from leasing of dwelling
- Operating surplus from owner occupied dwelling
- FISIM (which are missing only for a few of countries)
- Social transfers in kind received from the government - Health
- Social transfers in kind received from the government - Education

In addition, to further improve both the calculation of the classification variables for the breakdown as well as the reconciliation of EU-SILC and NA data, it would be useful to have NA data for:

- Interest paid on mortgage
- Distributed income of corporations received and/or entrepreneurial income
- Consumption of fixed capital (depreciation) related to dwellings.

The above list is not exhaustive; it could be added to according to further consideration of what data could be made available and how such data could be used.

3.4.2. Breakdown methods

Three breakdown methods were defined by the EGDNA, reflecting the availability of micro distributional information by NA component:

Method A: when information on the distribution is available in the micro source for the NA component. For these components, the available distributional information available in the micro data source was used for the calculation;

Method B: when no information on the distribution is directly available in the micro source for the NA component but imputation of distributional information was performed or available micro information can be used as a proxy. For these components, the imputed distributional information or the distribution of the proxy was used for the calculation;

Method C: when no information on the distribution is directly available, no imputation was performed and no relevant proxy was found. For these components, the NA totals were distributed across all households at the end of the calculation process in such a way that the inclusion or exclusion of these components had no impact on the final EGDNA disparity indicators. The distributional information used was therefore the average distribution calculated for all the components broken down using methods A and B.

This resulted in the breakdown of NA data by the three household groups agreed in the EGDNA for 28 countries and for the EU-27 as a whole.

In line with the EGDNA taxonomy of breakdown methods, in the European exercise method A was applied to break down the NA totals using micro data for the following components:

- Wages and salaries
- Operating surplus plus mixed income other than imputed rents
- Imputed rents
- Property income received minus property income paid ⁽²³⁾ other than FISIM and Property income

⁽²³⁾ With the exception of Italian data because in this case a method B was applied (§3.2.3).

received attributed to insurance policy holders

- Social benefits other than social transfers in kind received
- Current taxes plus social contributions paid other than employers' social contributions.

For these components, the distribution available in EU-SILC was applied directly to NA data.

The other income components needed to reach consistency with the NA definition of adjusted disposable income were broken down with the other two methods.

Method B was used for the following components:

- Stik (see § 3.2.1)
- FISIM
- Property income received attributed to insurance policy holders

And, finally, method C was used for the following components:

- Social benefits other than social transfers in kind paid plus other transfers paid
- Social contributions received plus other transfers received.

In all cases, the a-minima exercise adjusted/imputed micro information before benchmarking to NA totals.

3.4.3. The benchmark procedure

The EU-SILC distributional information for each of the NA income components was created according to the scheme in Table 2. For example, for the income component 'wages and salaries', the distributional information is given by adding up three EU-SILC variables for each household, namely the sum of 'Gross cash or near-cash employee income', 'Gross non-cash employee income' and 'Income received by people aged under 16'.

Next, the distributional information was benchmarked directly to the NA totals by taking into account the population weights. This procedure produces microdata totals that are consistent with the values of the adjusted NA income components

The benchmark procedure is as follows.

For a generic household h of the sample, let's call $IC_{EU-SILC}^h$ the EU-SILC distributional information for the NA income component IC_{NA} .

Let's suppose that all the values in the sample are positive for the income component IC .

The total distributional information for the EU-SILC target population is calculated by using the weights available in the database ($weight^h$).

The NA total for the income component is then divided by the EU-SILC total:

$$MC_{IC} = \frac{IC_{NA}}{\sum_h IC_{EU-SILC}^h * weight^h}$$

This ratio, called the multiplying coefficient (MC), is used to adjust the value of the income component in the sample in order to get a total population value identical to the NA value as follows:

$$\widehat{IC}_{EU-SILC}^h = IC_{EU-SILC}^h * MC_{IC}$$

In those cases where income is negative, the same methodology as used in the EGDNA exercise is applied in order to leave negative income unaltered in the sample. The multiplying coefficient in this case becomes:

$$\widetilde{MC}_{IC} = \frac{IC_{NA} + IC_{EU-SILC}^{neg}}{\sum_h IC_{EU-SILC}^h * weight^h}$$

where $IC_{EU-SILC}^{neg}$ is the weighted sum of negative incomes in the EU-SILC sample for the income component IC.

Where household income is negative, the NA benchmark formula for an income component IC s is therefore:

$$\hat{IC}_{EU-SILC}^h = \begin{cases} IC_{EU-SILC}^h, & IC_{EU-SILC}^h < 0 \\ IC_{EU-SILC}^h * \bar{MC}_{IC}, & IC_{EU-SILC}^h \geq 0 \end{cases}$$

This procedure has the attractive advantage of being consistent across classification variables because it is applied at the micro level independently of the grouping.

After benchmarking, the three classification variables are calculated for each household in EU-SILC. The households are then grouped by value of socio-economic variables and the value of the income components is calculated for each group by the weighted average. Across subgroups, the sum of the income components gave the NA totals.

3.4.4. The EU-27 aggregate

The breakdown of NA totals for the EU-27 aggregate was carried out by making use of the whole EU-SILC sample for all the 27 members except for Malta (the EU-26), for which NA data were not available, and of the NA data currently published by Eurostat for the EU-27 aggregate previously adjusted for NPISHs

After making the adjustments described in the previous paragraphs (benchmarks, reclassification etc.), NA data, estimated for each household and consistent with the NA country total, are available for 26 countries at the single country level.

Carrying out grouping for the EU-26 aggregate, Eurostat proceeded with the following steps:

- households in the EU-26 sample were allocated to groups according to the household type and the main source of income groupings already established at the single country level;
- for the equivalised income quintile classification at the EU26 level, each household's equivalised income in whole of the EU-26 sample was ranked once expressed in EU-27 Purchasing Power Parities;
- for each grouping, EU-26 NA variables by groups were calculated as a weighted average of the NA variables measured in each household of the group.

Finally the by groups NA measure for EU-26 was further rescaled to achieve EU-27 totals constraint.

4. Results of the breakdown of National Accounts data by groups of households

This section presents the results of the a-minima exercise for 2008 for 26 of the 27 EU Members States individually, for the EU-27 as a whole, and for Switzerland and Norway. The results presented focus on disposable income and adjusted disposable income as defined in the NA: these refer to household income before and after the provision of social goods and services by General Government and Non-Profit Institutions (social transfers in kind or Stik).

This exercise was launched to produce disparity information on household income compatible with the NA as published by Eurostat. Distributional information from household surveys was therefore used to break down the NA totals following the EGDNA internationally agreed methodology. NA data by groups of households were obtained according to three classification variables: main source of income, household type, equivalised disposable income quintile.

As each group potentially has a different composition in terms of the number and age of household members, to compare across different groups, an average NA subtotal was estimated by dividing the NA subtotal by the number of consumption units cu that belong to the group g as follows:

$$\bar{y}_g = \frac{NA_g}{cu_g}$$

where:

NA_g stands for the NA subtotal in the group g

cu_g : stands for the total number of consumption units in the group g .

In the remainder of this section, for brevity, the term ‘average’ is used for the per consumption unit average.

Average income \bar{y}_g has thus been calculated for each subgroup obtained. The next step involves measuring disparity across the different groups of households. In doing this, synthesis measures (indicators) have to be introduced in a way that ensures comparability across the countries.

Given a generic classification variable that divides the population into G household groups and let \bar{y}_g^z be the average income for group g in country z , the indicator of disparity across groups used by the a-minima exercise is as follows:

$$DI^z = \frac{St.Dev.(\bar{y}_g^z)}{|Mean(\bar{y}_g^z)|} * 100$$

where the notation St.Dev. stands for standard deviation.

For country z , this indicator measures the spread of income across household groups relative to the mean of the group average income. If all the measures of income for each household group in a country are equal, the dispersion is zero.

This inequality measure corresponds to the well-known coefficient of variation that is a normalised measure of dispersion around the average of a probability distribution.

There are two versions of the coefficient of variation according to whether the household structure in each country is taken into account (weighted) or not (non-weighted).

As one of the aims of the a-minima exercise was to emphasise the comparability across the countries, under the assumption of equal household structure for each country, the choice has fallen on the non-weighted measure, as this avoids introducing into the indicator the part of inequality that is due to the different composition of the household population in the country.

For this reason, in the disparity indicator the mean and the standard deviation are calculated as follows:

$$\text{Mean}(\bar{y}_g^z) = \frac{1}{G} \sum_g \bar{y}_g^z,$$

and

$$\text{St. Dev.}(\bar{y}_g^z) = \sqrt{\frac{1}{G} \times \sum_g (\bar{y}_g^z - \text{Mean}(\bar{y}_g^z))^2}.$$

The coefficient of variation is attractive because is independent of the level of income in the country.

This report notes that these disparity indicators differ from the distributional measures produced by the EGDNA because in the latter the coefficient of variation was weighted to take into account cross-country differences in the share of particular household groups in the total household population.

In the remainder of this section, disparity results are reported and analysed for the three classification variables and by NA income aggregates (disposable income and adjusted disposable income).

In addition, as disparity indicators for the variable 'equivalised disposable income quintile' are currently published for EU-SILC data in the form of the income quintile share ratio, we compare the results for the a-minima exercise and the EU-SILC data.

4.1. Household type

The a-minima exercise obtained NA sub-totals for eight different household types:

- a) Single person – less than 65 (single young)
- b) Single person – 65 and older (single elderly)
- c) One adult with 'children living at home', whatever the age of the adult (lone parent)
- d) Two adults – both less than 65 – without 'children living at home' (2adults_young_no child)
- e) Two adults – at least one 65 and older— without 'children living at home' (2adults_1 at least 65older_no child)
- f) Two adults with less than three 'children living at home', whatever the age of the adults (2adults_max2Children)
- g) Two adults with at least three 'children living at home' whatever the age of the adults (2adults_min3Children)
- h) Other household types (others).

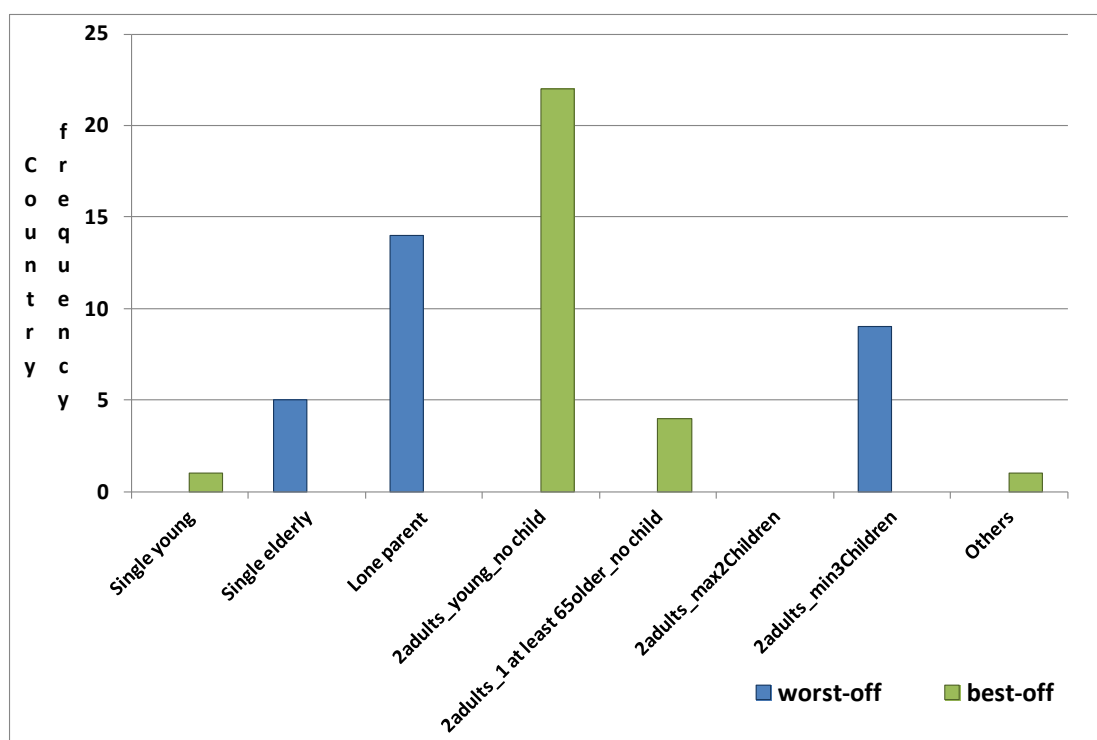
In brackets are the shortened terms used in the analysis of results. These terms are introduced to improve the readability of the following figures.

4.1.1. National Accounts subtotals by household type

Given the average disposable income by household type in a country, it is possible to rank the eight household types by income level. Across countries, the a-minima results do not show much similarity in the country ranking of household types by average income.

However, some household types tend to be those with the most extreme incomes (that is, the worst-off and the best-off households), in many countries (Figure 5).

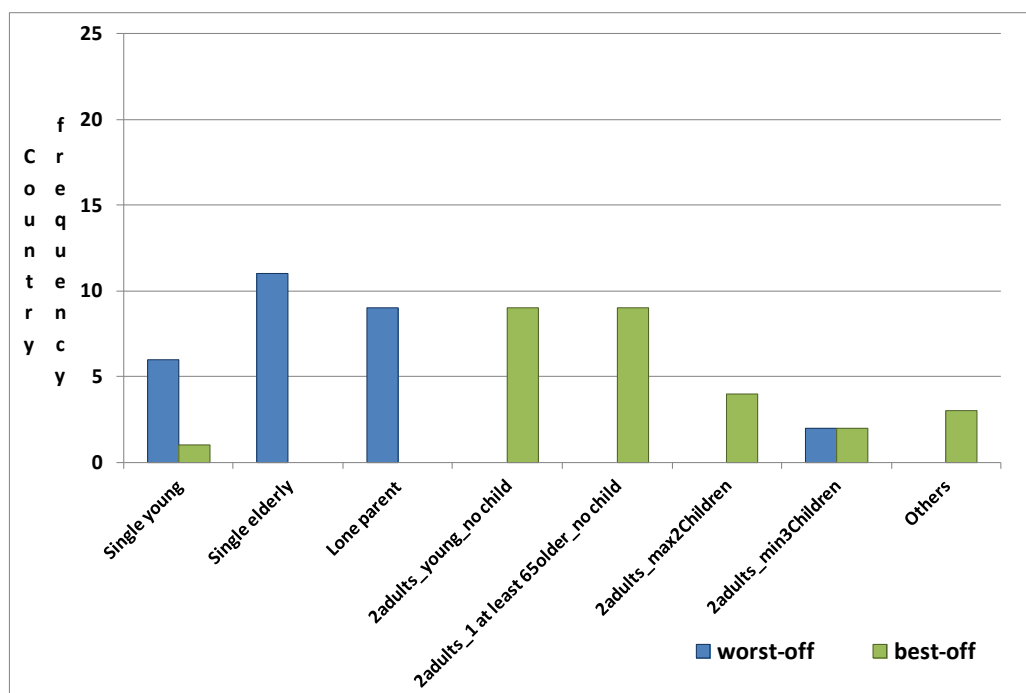
Figure 5: Disposable income: across country distribution of worst-off and best-off household types (2008)



Three household types are worst-off in the a-minima countries: lone parents in 14 countries, the households composed of 2 adults and 3 or more children in 9 countries and of single elderly people in 5 countries. Conversely, there is almost only one household type that is best-off: 2 young adults without children were best-off in 22 countries, while in four countries the best-off household type is the household composed of two adults – at least one 65 and older – without ‘children living at home’.

The inclusion of Stik in the definition of income means that a few household types are no longer always the worst-off or best-off across EU countries, compared with when Stik are excluded. There are still 3 types of household that are worst-off: lone parents (9 countries), single elderly person households (11), single young adults (6 countries).

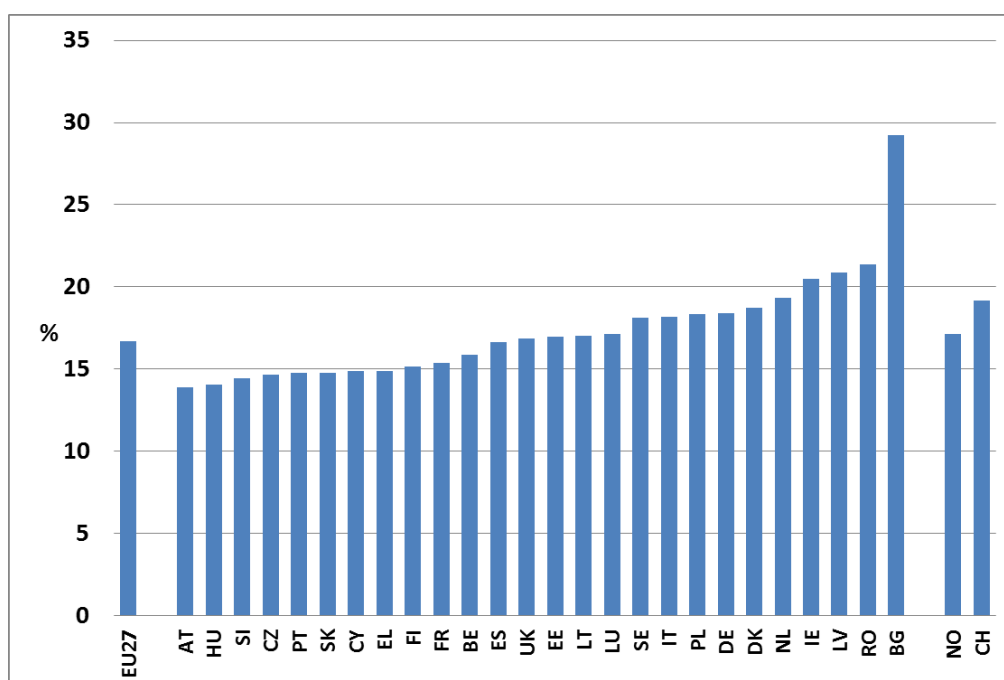
However, there are now 2 household types that are typically the best-off in EU countries: households composed of two adults – both less than 65 – without ‘children living at home’ or two adults – at least one 65 and older – without ‘children living at home’ are best-off in 9 countries each. In four countries, the best-off household type is two adults with at most two children (Figure 6).

Figure 6: ADI country distribution of worst-off and best-off household types (2008)

4.1.2. Disparity indicators by household type

Across the a-minima countries, the value of the disparity indicator is lower than 30 per cent for disposable income. While the disparity for the EU-27 aggregate is 17 per cent, Bulgaria has the greatest disparity between the average income of each of the household types (29 per cent), and Austria has the least disparity (14 per cent). Income disparity between types of household is therefore up to 2.1 times higher on average in Bulgaria than in Austria, meaning that the spread between average income of the best-off and worst-off household types in Bulgaria is twice that of the best-off and worst-off household types in Austria (Figure 7).

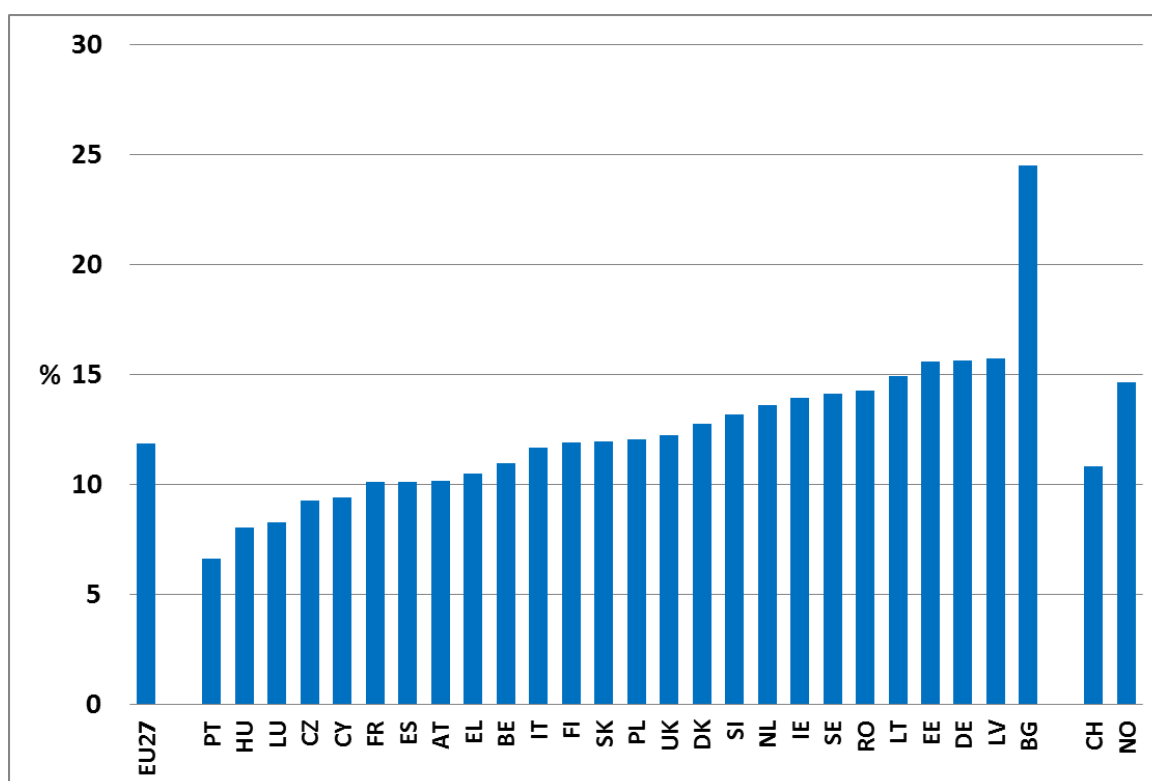
Figure 7: Disparity index by household type-disposable income per consumption unit (2008)



Comparing the disposable and the adjusted disposable income, we can evaluate the change in disparity before and after including Stik in the definition of income.

The results from the a-minima exercise show that, for the year 2008, the inclusion of Stik reduced the disparity between the average incomes of the different household types for all countries and the disparity ranking of most of countries is changed: Portugal, with 7 per cent, becomes the country with the least disparity (Austria moves to eighth place), while Bulgaria, with 25 per cent, continues to have the greatest disparity (Figure 8).

Figure 8: Disparity index by household type - adjusted disposable income per consumption unit (2008)



4.2. Main source of income

The a-minima exercise split NA totals according to the four following main sources of incomes:

- wages and salaries
- income from self-employment
- property income and
- current transfers received.

This section reports the results of this breakdown, firstly using per consumption units subtotals and then using disparity indicators.

The number of households for which property income is the main source of income is extremely low in some countries' EU-SILC sample. These households account for only 1.4 per cent of all households in the total EU-27 sample. As a low sample size implies a low level of confidence in a survey estimate, the results for those households for which 'property income' is the main source of income should be interpreted with caution.

4.2.1. National Accounts subtotals by main source of income

The a-minima exercise shows that the range of average disposable income of households by main source of income differs across countries.

In Figure 9, each coloured diamond represents a country and the diamonds connected by a line show the average disposable income for the EU-27 aggregate. Values are in thousands of EUR, and the values for countries at the extreme ends of each range are labelled.

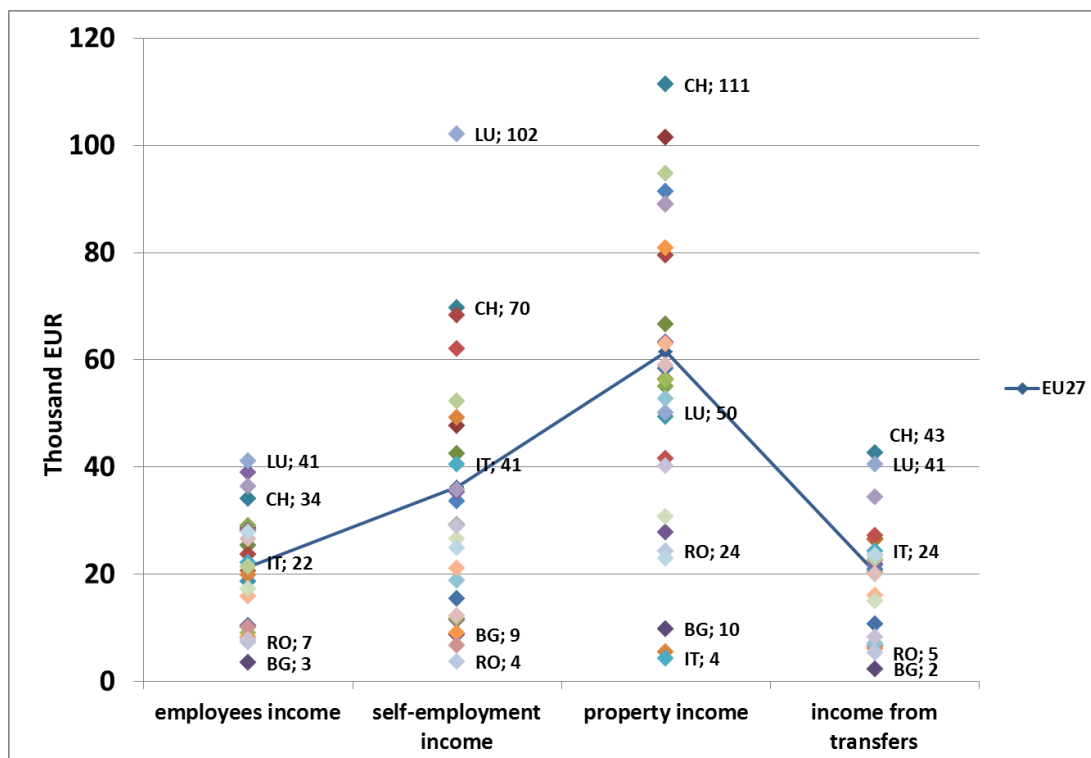
The ranges of values for average disposable income for households with 'wages and salaries' and 'income from transfers' as main source of income are similar: respectively EUR 3 000 to 41 000 and

EUR 2 000 to 43 000.

However, the range for both is about one third of the ranges for self-employment income as main source of income (from EUR 4 000 to 102 000) and for property income as main source of income (from EUR 4 000 to 111 000).

Switzerland is in the top 4 countries with the highest average disposable income for all main source of income. Luxembourg is in the top 4 except for property income. At the other end, Bulgaria and Romania are both in the bottom 4 countries with the lowest average disposable income.

Figure 9: Range of average disposable income by main source of income across countries (2008)



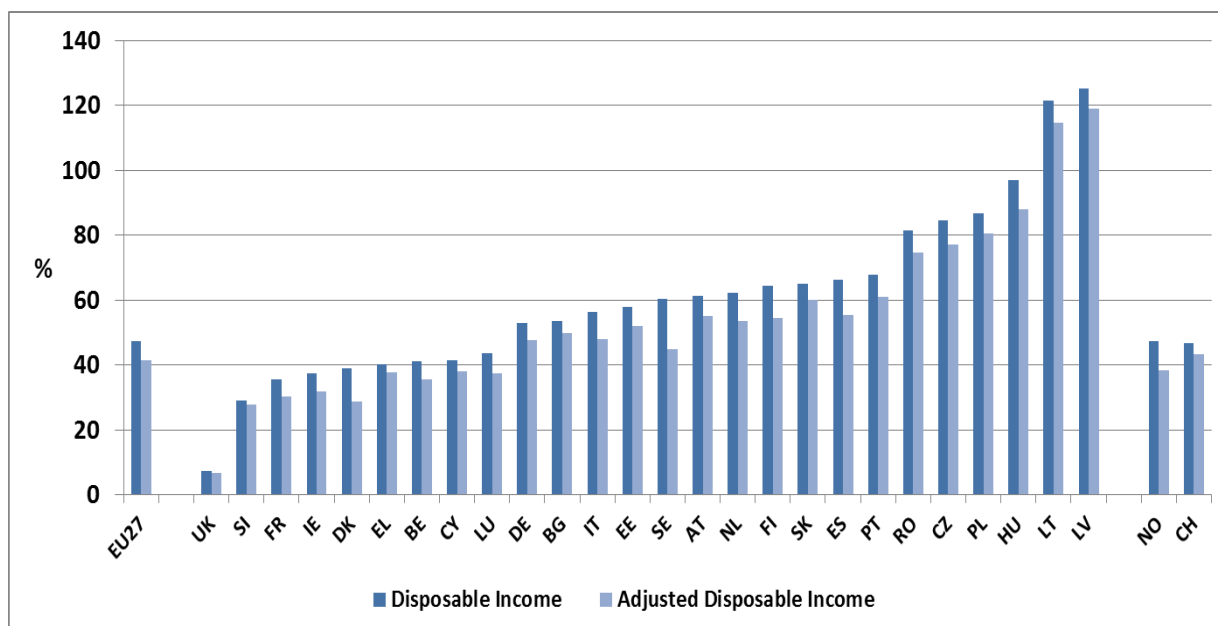
Notes: – Each coloured diamond represents one of the 28 countries analysed in the a-minima exercise.
 – Italian data for NA totals for self-employment and property income were adjusted differently from the other countries (Annex 2).
 – Countries at extremes of the ranges are labelled.

4.2.2. Disparity indicators for main source of income

Disposable and adjusted disposable income disparity by main source of income is shown in Figure 10 where countries are ranked by increasing disparity in disposable income.

At the EU-27 aggregate level, the disparity in the average income of households with the different main sources of income is 48 per cent, with the United Kingdom having the least disparity (7 per cent for disposable income) and Latvia having the greatest disparity (125 per cent for disposable income): this means that Latvia's disparity is 17 times higher than that for the UK.

The inclusion of social transfers in kind in the definition of income reduces disparity at the EU-27 aggregate level by 12 index points, with the reduction due to Stik lowest for Slovenia and highest for Denmark. The ranking of countries changes but by not so much as is the case for household type disparity. The countries with the lowest and highest disparity do not change, though, once Stik is included in the definition of income, with the UK disparity remaining 7 per cent and Latvia reducing to 119 per cent.

Figure 10: Disparity index by main source of income (2008)

Note: Countries ranked according to disposable income disparity

4.3. Equivalised disposable income quintile (EQID)

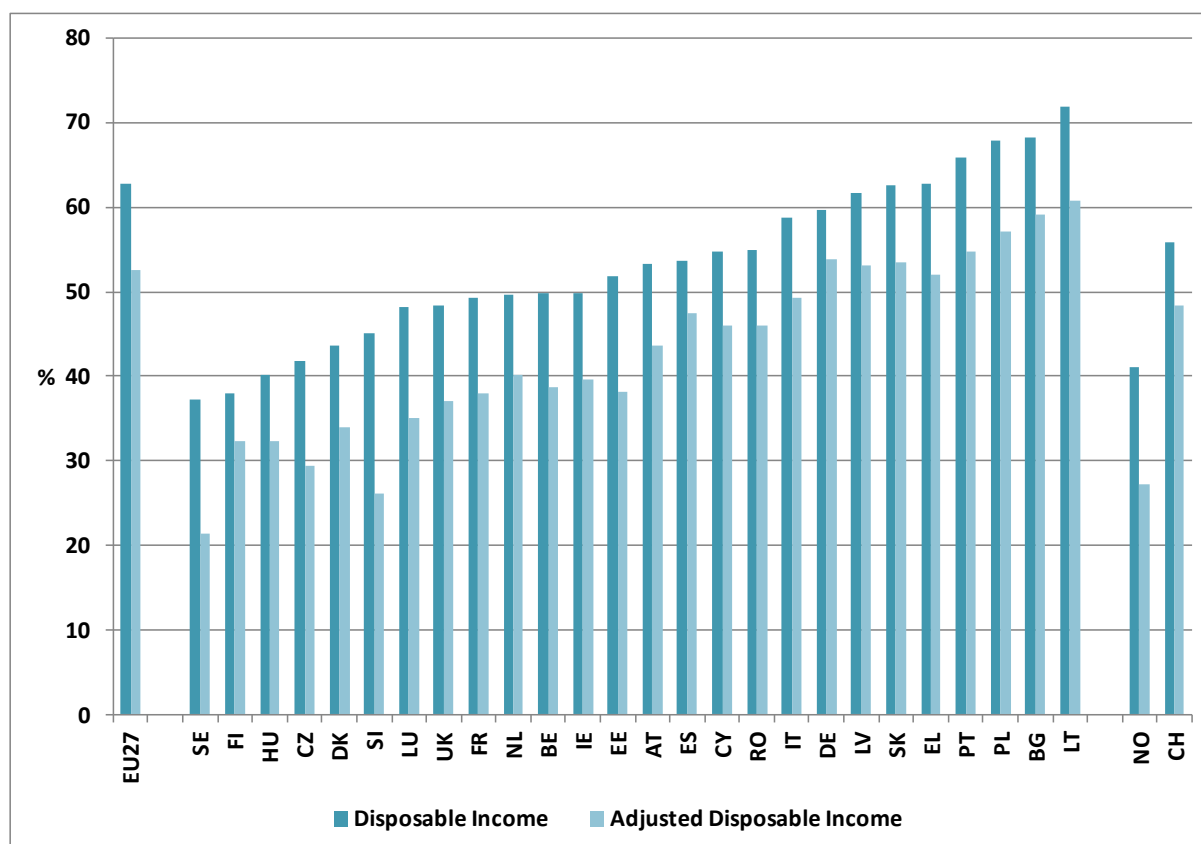
4.3.1. Disparity indicators by disposable income quintile

Disposable income disparity between EQID household groups are shown in Figure 11, where countries are ranked by increasing disparity in disposable income.

The disparity in disposable income for the EU-27 as a whole is 63 per cent, with the least disparity for Sweden (37 per cent) and the most for Lithuania (72 per cent). Disparity in Latvia is double what it is in Sweden.

Taking into account the provision of Stik decreases the disparity for all countries (Figure 11).

Even if the reduction due to the inclusion of Stik differs by country, the inclusion of Stik only results in countries changing their ranking by at most of one or two positions and it has no effect on which are the countries with the least and the most disparity: Sweden's disparity becomes 24 per cent and Lithuania's 61 per cent.

Figure 11: Disparity index by EDIQ-disposable income per consumption unit (2008)

Note: Countries ranked by increasing disparity in respect to the disposable income.

4.3.2. Income quintile share ratio: comparison with EU-SILC

There is a great deal of literature on disparity indicators across equivalised disposable income quintiles, and several formulas for indicators are available. For brevity reasons here, we focus on the most often-used formula: the income quintile share ratio.

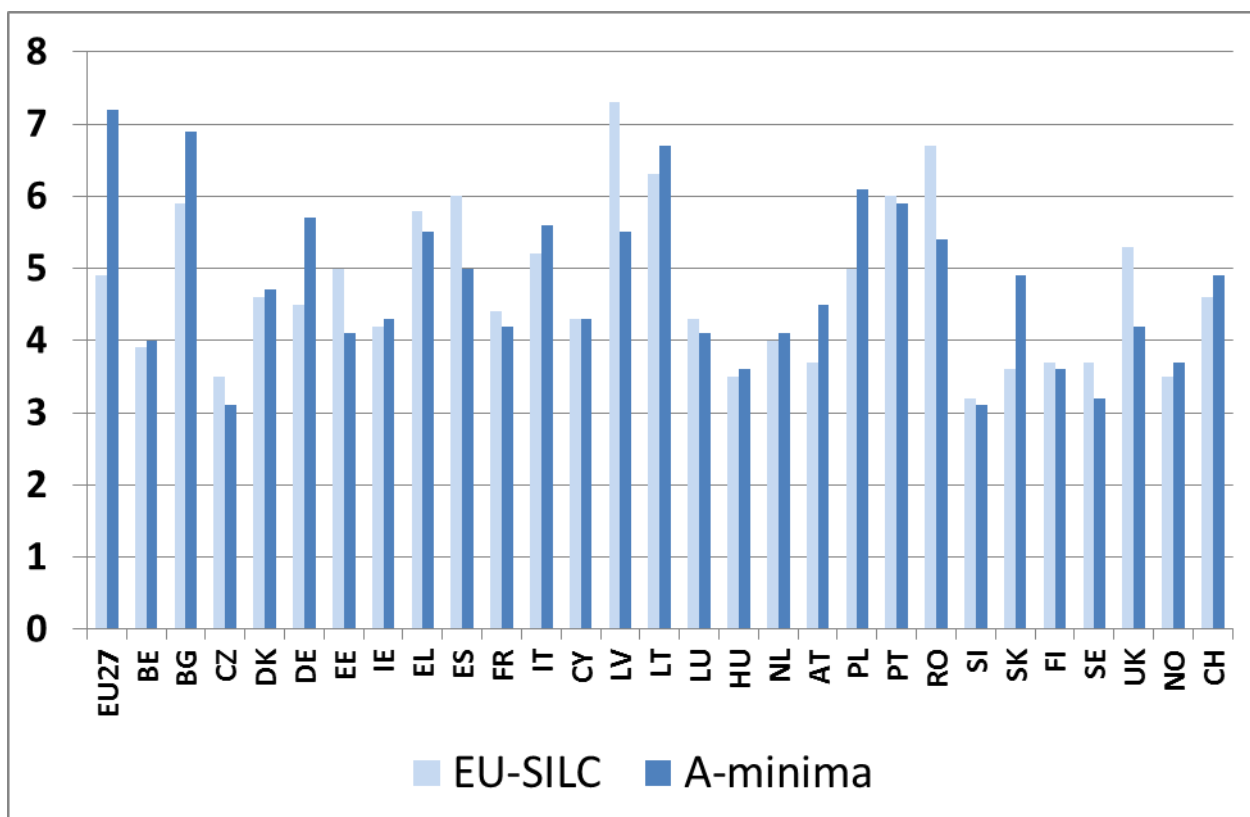
This indicator, also referred to as the S80/S20 ratio, is a measure of the inequality of an income distribution. It is calculated as the ratio of total income received by the 20 per cent of the population with the highest income (the top quintile) to that received by the 20 per cent of the population with the lowest income (the bottom quintile).

All incomes are calculated as equivalised disposable incomes, in other words, by dividing by the number of consumption units the income refers to. In this way, the numbers of adults and of children in the household are taken in account.

This section presents the comparison between a-minima results and EU-SILC published data for the income quintile share ratio (Figure 12).

This Figure compares country by country the EU-SILC indicator (light column) with the equivalent a-minima one (dark column).

There appears to be no systematic difference across countries between the two sets of data: for some of them the a-minima shows a higher level of disparity than EU-SILC and for others the a-minima shows a lower level of disparity.

Figure 12: Comparison of S80/S20 results between the a-minima and EU-SILC (2008)

Note: EU-SILC indicator for the income quintile share ratio refers to 2009 data collection.

If we fix a 5 per cent significance threshold for the percentage difference, we can see that for nine countries the a-minima showed more disparity and for 8 countries it showed less disparity. For eleven countries the differences is not significant.

There are several reasons for these divergences between results from the a-minima exercise and from EU-SILC. Comparing the methodology adopted in the two exercises, the main three reasons are:

1. the imputations and adjustments carried out in the a-minima exercise on the original EU-SILC data to fill the gaps with NA data
2. the benchmark procedure applied in the a-minima exercise to reach consistency between EU-SILC weighted totals and the NA totals
3. the fact that the analysis was carried out in the a-minima exercise at the household level whereas the EU-SILC analysis presented here was carried out at the individual level.

At the level of the EU-27 aggregate, the difference is very high. In addition to the three reasons already given immediately above, the exact form of the calculation for the EU-27 aggregate differs. In the a-minima exercise, the quintile ratio was calculated at the level of the EU-27, that is, not determining national quintiles but EU-27-level quintiles using income expressed in Purchase Power Parities. The EU-SILC methodology, as agreed by the Indicators' Sub-Group⁽²⁴⁾, instead calculates the EU-27 indicator as an average of individual country indicators weighted by each country's population.

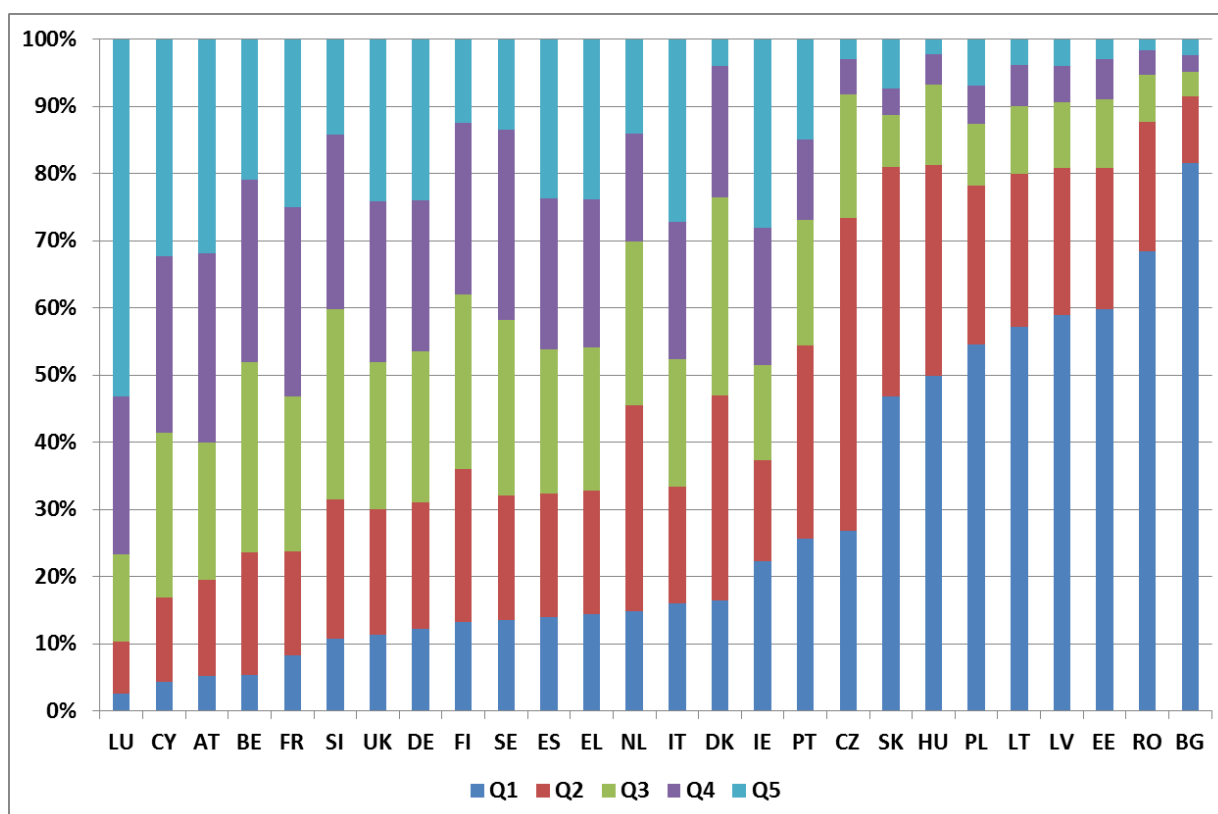
Figure 13 shows the share of households that belong to each of the EU-27 quintiles by country. This Figure shows that more than 50 per cent of the households of several countries (Bulgaria, Romania, Estonia, Latvia, Lithuania, Poland and Hungary) belong to the bottom EU-27 quintile whereas in the top

⁽²⁴⁾ The Indicators' Sub-Group (ISG) of the Social Protection Committee (SPC) is responsible for the formulation and definition of indicators to be used for monitoring countries' progress towards the commonly agreed objectives which underpin the Open Method of Coordination in relation to social inclusion, pensions, health and long-term care.

quintile there are more households from high-income countries such as Luxembourg, Cyprus, Austria, France, Germany etc.

If we replicate the EU-SILC methodology for calculating the income quintile ratio in the a-minima exercise, the a-minima quintile share ratio has exactly the same value as the EU-SILC indicator (4.9).

Figure 13: By country share of households in the EU-27 quintiles (2008)



Note: Countries ranked by increasing share of household in the EU-27 first quintile.

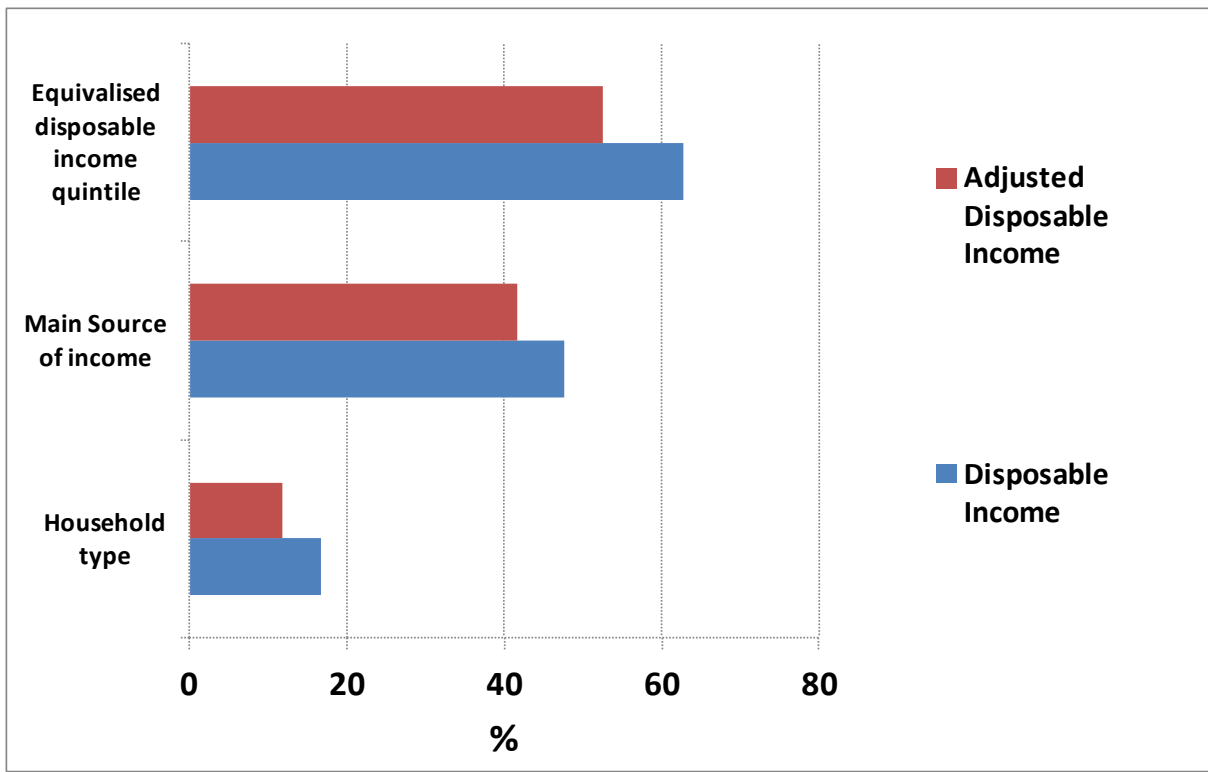
Even if the three reasons above can explain the divergences between countries shown in Figure 12 at a conceptual level, it would be interesting in a future exercise to carry out a more systematic comparison by looking at each individual reason in turn and performing the comparison for several income years to see if these results recur across time. This would help in understanding discrepancies in results from a practical point of view but also to revise and cross-check the a-minima procedure against its main source of micro information: the EU-SILC data collection.

4.4. Comparison of disparity across classification variables on the EU-27 aggregate

The a-minima exercise shows that for both disposable and adjusted disposable income NA aggregates, the household grouping that shows the greatest disparity is income quintile, although the disparity when households are grouped by main source of income is not much less. Disparity is lowest when households are grouped by household type.

If we look at the provision of social transfers in kind, disparity in absolute value decreases for all household groups, but in particular for equivalised disposable income quintile (Figure 14).

Figure 14: Disparity for the EU-27 aggregate: comparison across classification variables (2008)



5. Conclusions and future steps

This report presents the results of Eurostat's a-minima exercise, one half of a two-part project launched to develop indicators of the distribution of income, consumption and wealth that are consistent with and can be interpreted alongside internationally-comparable macro-economic statistics.

The whole project was carried out under the methodological umbrella of the joint OECD-Eurostat Expert Group on Disparities in a National Accounts framework. Whereas this Eurostat exercise focusses on the use of harmonised sources from within the European Statistical System for countries in the EU, the other half of the project focusses on the best sources of information on a country's situation, irrespective of whether the source is an internationally-harmonised one or not.

The a-minima exercise was separated into two phases. During its first phase, the a-minima exercise investigated the similarities and differences between EU-SILC and NA data for household income. During the second phase, it produced a breakdown of NA data for income components by three groupings of households: household type, main source of income and equivalised income quintile.

The breakdown exercise used data from EU-SILC and the NA for one income reference year (2008) to produce results for 26 of the EU-27 member states, for the EU-27 aggregate and for 2 EFTA members.

Results on disparity between groups of households that are consistent with the NA income totals are presented, which add to the aggregate information that is already published in the NA aggregates.

Disparity is higher in certain countries than in others but the story is different according to which of the three groupings of households is being looked at: household type; main source of income; or income quintile. The disparity is reduced to a greater or lesser extent in different countries when social transfers in kind are included in the definition of income.

When this component is taken into account, among the three groupings, the household type grouping is mainly what changes for rank of the countries.

The highest disparity in the average income of groups of households is seen when households are grouped by income equivalised quintile and lowest when grouped by household type. The greatest absolute reduction in disparity due to the inclusion of social transfers in kind is shown for the equivalised disposable income quintile grouping.

This report notes that these results are obtained by following the methods agreed by the EGDNA to the greatest possible extent and by making several assumptions during the estimation process.

In the a-minima exercise, the most important assumptions were made in order to fill gaps between NA and EU-SILC data, mainly to match the scopes of NA and EU-SILC and to impute social transfers in kind in the EU-SILC sample.

The procedure adopted for filling these gaps, including the assumptions made, is neither exhaustive nor definitive: it is a first attempt to exploit the cross-country comparable information that is available in the European Statistical System for the purposes of understanding the distribution of income across different groups of households. A different set of procedures, assumptions and datasets is likely to produce different results.

These procedures are described fully in this report, issues are shown, alternatives suggested and missing information from both the EU-SILC and the NA data clearly indicated.

It is also indicated where NA and/or EU-SILC data sources do not include some income components needed for completing the methodological template agreed by the EGDNA.

The a-minima exercise, together with the EGDNA country exercises, is only a first step in developing the production of distributional measures in the NA framework. At least two further steps are required to make this production continuous and operational.

Firstly, as having information on income does not on its own provide a clear picture of the economy of a household, it is important to complement the analysis by producing information on household

consumption and wealth.

Regarding consumption, while the country exercises carried out in the EGDNA framework produced combined results on income and consumption, this a-minima exercise has only touched on income.

However, in the European context, cross-country comparable information on consumption is available in the Household Budget Survey and Eurostat is attempting to match the results of this survey with EU-SILC data. When such matched results are available, the a-minima exercise could be replicated by grouping NA data on consumption by the groupings of households adopted in this exercise.

Expanding the work to also cover wealth will be more difficult, because of the lack of cross-country comparable information in both micro and macro data sources. However, for both consumption and wealth, new information will shortly become available, namely the micro information collected by the European Central Bank through the Eurosystem's Household Finance and Consumption Survey (HFCS) (for countries in the Eurozone) and the greater amount of macro-economic information to be collected centrally by Eurostat under the latest revision to the way in which NA are compiled.

Secondly, as economies change over time, the same will certainly be true of household income distributions. Consequently, the production of NA subgroup totals should be replicated annually for a certain time span. The aims of this additional but important study are to compare across time results to verify and improve methods adopted, and to study the feasibility and applicability of a similar exercise in the current data production.

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Technical annexes

Annex 1: Data sources for the a-minima exercise

Eurostat

http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/search_database

1. online data code: [nasa_nf_tr](#) (National Accounts data on Households and Households plus NPISHs)
year: 2008
2. online data code: [cens_01nhtype](#)
year: 2001
3. online data code: [demo_pjan](#)
year: 2008/2009
4. online data code: [migr_pop1ctz](#)
year: 2008/2009
5. online data code: [bop_remit](#)
year: 2008
6. online data code: [educ_enr1t1](#) (Students by ISCED level, age and sex)
year: 2008
7. online data code: [spr_exp_eur](#) (ESSPROS data)
year: 2008
8. online data code: [gov_a_exp](#) (Cofog data)
year: 2008
9. online data code: [nama_co3_c](#) (COICOP data three digits)
year: 2008

DG ECFIN and the Economic Policy Committee (Ageing Working Group)

Health Care by age profile/GDP per capita

Istat

1. link <http://www.istat.it/it/archivio/33602>
year 2008
2. link <http://www.istat.it/it/archivio/48022>
year 2008

Bank of Italy

http://www.bancaditalia.it/statistiche/indcamp/bilfait/dismicro;internal&action=_setlanguage.action?LANGUAGE=en

year 2008

EU-SILC data

Eurostat

Production Data Base (PDB) cross-sectional
year: 2009 for all the countries but IE and UK
year: 2008 for IE and UK

Annex 2: Reconciliation of the EU-SILC and NA datasets in detail

This Annex reports on the analysis of differences between the NA and EU-SILC datasets. The main sources of information for this analysis were the methodological sources for the two datasets. Supplementary information came from the EU-SILC quality reports; and, from clarifications supplied by country experts from both the macro and micro fields. However, due to the limited time available to carry out this project, the systematic collection of country information from data producers has not been possible.

The differences between the two sets of estimates have been distinguished according to (i) general differences, which impact on almost all the aggregates, and (ii) other differences, which are aggregate-specific. The next section presents a list of general differences between the two macro and micro data sources. Aggregate-specific differences are explored instead in the last part of this Annex, where the figures from the two datasets are compared for a given year.

General conceptual and methodological reconciliation

EU-SILC is a sample survey for which information is extracted either from registers or collected from interviews. In EU-SILC, imputations are made to correct the data for, for example, survey non-response. NA data are the result of merging and complementing data coming from a wide variety of different data sources at both the macro and micro level. In NA, imputations are made where sources on specific economic transactions are missing and in order to reach internal consistency.

Reference population and scope

The reference populations of EU-SILC and NA coincide for the part that in EU-SILC is called private households⁽²⁵⁾. EU-SILC is a survey of the current members of all private households residing in the territory of the Member State at the time of data collection. Persons living in collective households and in institutions⁽²⁶⁾ are generally excluded from the EU-SILC target population, whereas they are included in the NA. An estimate of the percentage of population is available for most countries in the EU-27 and EFTA⁽²⁷⁾, based on the 2001 Census, and is reported in Table 4.

Moreover, small parts of the national territory amounting to no more than 2 % of the national population and the national territories may be excluded from EU-SILC (e.g. in France the overseas territories).

From the NA side, six of the countries analysed in the a-minima exercise (Denmark, Germany, Ireland, Austria, United Kingdom and Switzerland) do not publish information in the NA for households alone. Instead, these countries combine information on the household and Non Profit Institutions Serving Households (NPISHs) sectors, mainly because of the lack of sufficient data on Non-Profit Institutions.

⁽²⁵⁾ From Regulation No 1177/2003 of the European Parliament and of the Council of 16 June 2003: "private household": means a person living alone or a group of people who live together in the same private dwelling and share expenditures, including the joint provision of the essentials of living".

⁽²⁶⁾ From Commission Regulation no 1982/2003 of 21 October 2003:

"Collective household: refers to a non-institutional collective dwelling such as a boarding house, dormitory in an educational establishment or other living quarters shared by more than five persons without sharing household expenses. Also included are persons living as lodgers in households with more than five lodgers".

"Institution: refers to old people's homes, healthcare institutions, religious institutions (convents, monasteries), correctional and penal institutions. Basically, institutions are distinguished from collective households by virtue of the fact that, in the former, the resident persons have no individual responsibility for their housekeeping. In some cases, old people's homes can be considered as collective households on the basis of that rule."

⁽²⁷⁾ Here and hereafter the following country international codes will be used. For the EU state members Belgium (BE), Bulgaria (BG), Czech Republic (CZ), Denmark (DK), Germany (DE), Estonia (EE), Ireland (IE), Greece (EL), Spain (ES), France (FR), Italy (IT), Cyprus (CY), Latvia (LV), Lithuania (LT), Luxembourg (LU), Hungary (HU), Malta (MT), Netherlands (NL), Austria (AT), Poland (PL), Portugal (PT), Romania (RO), Slovenia (SI), Slovakia (SK), Finland (FI), Sweden (SE), United Kingdom (UK). For the EFTA countries: Iceland (IS), Liechtenstein (LI), Norway (NO), Switzerland (CH).

Table 4: Population living in institutional and collective accommodation as a percentage of total population (2001)

Country	(%)	Country	(%)	Country	(%)	Country	(%)
ES	0.6	NO	0.8	DK	1.3	UK	1.8
CY	0.6	DE	1.0	BG	1.4	FI	1.9
BG	0.7	LV	1.0	NL	1.4	FR	2.2
CZ	0.7	PT	1.0	RO	1.5	HU	2.5
IT	0.7	AT	1.1	IE	1.6	EL	3.4
LT	0.7	PL	1.1	SK	1.6	CH	4.1
SI	0.7	EE	1.2	LU	1.7		

Source: Eurostat

Statistical units and availability of detailed data

The EU-SILC data collection refers to personal and household level information⁽²⁸⁾. However, EU-SILC only collects detailed data, including income data, on household members aged 16 and more. For those aged till 15 years, only the variable 'income received by people aged under 16 years' is collected by EU-SILC. In the NA, no distinction is made by age: income is income, irrespective of age of recipient. In order to match detailed income components from EU-SILC and NA, it is therefore necessary to make assumptions about the age/income component distribution in the NA.

Income reference period

In EU-SILC, the income reference period is the year prior to the data collection for most countries⁽²⁹⁾, while the household demographic information refers to the year of the survey. For example, the 2009 EU-SILC data collection for Italy refers to income accrued in 2008, but the composition of the household refers to 2009.

National Accounts for a specific year refer to the income generated in that specific year.

At the time this comparison exercise was performed, the 2009 EU-SILC data collection was available and year 2008 was typically the income reference period for the households.

Income concept

EU-SILC is a relatively new data collection. It was introduced in 2003 by 'framework regulation' No 1177/2003 of the European Parliament and of the Council of 16 June 2003. The EU-SILC content and concepts may change between each annual round of data collection, to take account of the changing information needs of users as well as the changing circumstances of households. This is the reason why the report distinguishes the year chosen for the comparison (2009 EU-SILC data collection) from subsequent years. Income variables and their codes for the 2009 EU-SILC collection are reported in Table 5 whereas income components from ESA95 are reported in Table 6.

The income variables which have been excluded, for methodological reasons, from the EU-SILC income concept (even if they are available in the EU-SILC dataset) are as follows:

- Imputed rents (considered to be part of gross operating surplus in the NA)
- Non-cash employee income other than company cars (considered to be part of compensation of employees in the National Accounts)
- Value of goods produced for own consumption (considered to be part of mixed income in the NA)

⁽²⁸⁾ By convention, personal EU-SILC variables start with P (such as PY010G) and household variables start with H (such as HY110G). Because of the age limit discussed above, EU-SILC variables starting with P are not available for people aged less than 16 years by definition.

⁽²⁹⁾ Ireland and United Kingdom are exceptions. In the former the income reference period is the last twelve months. In the latter the current income is annualised and aims to refer to the current calendar year, i.e. weekly estimates are multiplied by 52, monthly by 12.

— Interest repayments on mortgage (considered to be part of property income paid in the NA).

Table 5: EU-SILC income variables by code (2009 data collection)

EU-SILC	Content	EU-SILC	Content
HY010	Total household gross income	PY010G	Employee cash or near cash income
HY020	Total disposable household income	PY020G	Non-Cash employee income
HY030G	Imputed rent	PY021G	Company car
HY040G	Income from rental of a property or land	PY030G	Employer's social insurance contribution
HY050G	Family/Children related allowances	PY035G	Contribution to individual private pension plans
HY060G	Social exclusion not elsewhere classified	PY050G	Cash benefits or losses from self-employment
HY070G	Housing allowances	PY070G	Value of goods produced for own consumption
HY080G	Regular inter-household cash transfer received	PY080G	Pension from individual private plans
HY090G	Interest, dividends, profit from capital investments in unincorporated business	PY090G	Unemployment benefits
HY100G	Interest repayments on mortgage	PY100G	Old-age benefits
HY110G	Income received by people aged under 16	PY110G	Survivor' benefits
HY120G	Regular taxes on wealth	PY120G	Sickness benefits
HY130G	Regular inter-household cash transfer paid	PY130G	Disability benefits
HY140G	Tax on income and social contributions	PY140G	Education-related allowances

Note: EU-SILC variables that start with P refer to individual data, with H refer to household data

Conversely, for the year chosen, the EU-SILC income concept includes as part of social benefits the housing allowances which in NA should be recorded as part of Stik. However, the a-minima exercise has shown that this NA rule is not strictly followed in practice by a certain number of countries. In the successive 2010 data collection, one of the changes made to the EU-SILC income concept was to add a variable called private pensions. As this variable is related to one of the country-specific disparities identified by the a-minima exercise, this is explained later in this report in the section entitled '*Social benefits in cash and housing allowances*'.

Reconciliation by income component

This section presents the detailed results for the comparison between EU-SILC and NA components from the allocation of primary accounts to the secondary distribution of income account, on both conceptual and empirical bases. The conceptual analysis involved comparing the definitions and contents of components of the two data sources to determine specific similarities/differences. The empirical analysis involved a comparison of the values based on the results of the analysis above.

Coverage rates (CR) are calculated as the percentage of the EU-SILC value compared with the corresponding NA value, with the following formula for each component x and country z:

$$1) \quad CR_{x,z} = \frac{EU - SILC_{x,z_weighted_total}}{NA_{x,z}} * 100$$

Table 6: NA income components by code

NA Code	Content
B.2	Mixed income
B.3	Operating surplus
D.1/RES	Compensation of employees received
D.1/USE	Compensation of employees paid
D.11/RES	Wages and salaries
D.12/RES	Employers' social contributions
D.29/USE	Other taxes on production paid
D.39/USE	Other subsidies on production
D.4/RES	Property income received
D.4/USE	Property income paid
D.41/RES	Interest received
D.41/USE	Interest paid
D.42/RES	Distributed income of corporations
D.44/RES	Property income attributed to insurance policy holders
D.45/RES	Rents received
D.45/USE	Rents paid
D.5/USE	Taxes on income and wealth (termed also current taxes)
D.51/USE	Taxes on income
D.59/USE	Current taxes on capital
D.61/USE	Social contributions
D.6112/USE	Employees' social contributions
D.6113/USE	Social contributions by self- and non-employed persons
D.62/RES	Social benefits other than social transfers in kind (termed also social benefits in cash)
D.621/RES	Social security benefits in cash
D.622/RES	Private funded social benefits
D.623/RES	Unfunded employee social benefits
D.624/RES	Social assistance benefits in cash
D.63	Social transfers in kind
D.72/RES	Non-life insurance claims
D.71/USE	Net non-life insurance premiums
D.75/RES	Miscellaneous current transfers received
D.75/USE	Miscellaneous current transfers paid
FISIM	Financial intermediation services indirectly measured
P.11	Market output
P.12	Output produced for own final use
P.13	Other non-market output
P.2	Intermediate consumption
K.1	Consumption of fixed capital
B.6	Disposable income
B.7	Adjusted disposable income

Note: RES refers to the resources of the households, whereas USE refers to their expenditure.

Closeness adjustments have been applied to the variables from both datasets before calculating CRs. For example, as the NA values include an adjustment for FISIM⁽³⁰⁾, whereas micro data do not, NA estimates of total interest before the FISIM adjustment have been used for the comparison of property income. The other way round, from the micro point of view, the income concepts from EU-SILC have been complemented or/and taken net for some variables to increase consistency with the NA income concept.

In the a-minima exercise, these CRs are calculated for the given income year (2008) for 26 countries out of the 31 EU and EFTA members and for the EU-27 as a whole. The European coverage rates are

⁽³⁰⁾ Financial intermediation services indirectly measured is a component reallocated from property income to consumption by National Accounts for accountancy reasons.

obtained directly by working with NA and EU-SILC data at the EU-27 level.

More precisely, coverage rates are estimated for 24 members of the EU-27: Belgium, Czech Republic, Denmark, Germany, Estonia, Ireland, Greece, Spain, France, Italy, Cyprus, Latvia, Lithuania, Luxembourg, Hungary, Netherlands, Austria, Poland, Portugal, Slovenia, Slovakia, Finland, Sweden, United Kingdom, and for Norway and Switzerland.

This exercise has not included any comparison work for the remaining 5 countries because:

1. though present in the EU-SILC dataset, NA data for Bulgaria, Malta, Romania, Iceland are not available at all or insufficient for the comparison scope;
2. Liechtenstein does not produce both datasets for the income year chosen.

To calculate the coverage rates for the 6 countries that publish only estimates for the combined households plus NPISHs⁽³¹⁾ sector, an experimental procedure, described in 0, has been used to arrive at household-only estimates.

The EU-27 coverage rates of EU-SILC to NA data have been calculated on the basis of the European NA aggregates published by Eurostat. These European aggregates are only available for the combined households and NPISH sector, so the value of the NPISH component (either as published by a country or as calculated for the a-minima exercise and therefore as described immediately above) has been subtracted. The household sector-only income aggregates are then compared to the EU-SILC totals for EU-27. In the remainder of this section, when quoting the NA income components it is indicated if they belong to the resources of the households (RES) or to their expenditure (USE) unless it is clear from the context.

The NA income components analysed by Eurostat in this reconciliation are as follows:

- *Compensation of employees*
- *Gross operating surplus and mixed income*
- *Property income received*
- *Social benefits other than social transfers in kind received*
- *Social benefits in cash and housing allowances*
- *Social benefits in cash and pensions from individual private plans*
- *Other receipts:*
- *Property income on the use side*
- *Taxes on income and wealth and social contributions*
- *Other expenditure:*

The above components make up disposable income, which is the balancing item of the secondary household sector income account and the NA income concept adopted in this part of the a-minima exercise. Components that are not included in EU-SILC are grouped under the two headings other receipts and other expenditure.

⁽³¹⁾ With two exceptions: Austria and Switzerland present separately some items for the household and NPISH sectors.

Compensation of employees

Table 7 lists the items used for this comparison and the corresponding definitions in the two datasets.

Table 7: Definitions for ‘compensation of employees’

National Accounts (NA)	EU-SILC
<p>Compensation of employees (D.1/RES) Definition: ‘total remuneration, in cash or in kind, payable by an employer to an employee in return for work done by the latter during the accounting period’ (ESA95, §4.02) Components: (+) wages and salaries (D.11/RES) (in cash and in kind) (+) employers’ social contributions (D.12/RES) (= D.6111/USE + D.612/USE, later deducted, see social contributions)</p> <p>Remarks: Employers’ social contributions (D.12/RES) are included in employee income, but the same amount is subtracted as part of social contributions (D.6111/USE + D.612/USE)</p>	<p>Employee income: Definition: ‘total remuneration, in cash or in kind, payable by an employer to an employee in return for work done by the latter during the income reference period’ Components: (+) gross cash or near-cash employee income (PY010G) (+) gross non-cash employee income (PY020G) (+) employers’ social insurance contributions (PY030G) (EU-SILC Reg., Annex I, Art. 2.1)</p> <p>Remarks: 1. HY110G or income received by people aged under 16 is a mixed item and includes employee income too 2. Imputed social contributions are not in the micro source</p>

Notes: – Bold text indicates the main differences between EU-SILC and NA.
 – EU-SILC Reg. stands for Commission regulation (EC) no 1980/2003 of 21 October 2003.

From the EU-SILC side, for the comparison the income received by people aged under 16 was added. Then for employees income, equation (1) becomes:

$$2) \quad CR_{x,z} = \frac{(PY010G + PY020G + PY030G + HY110G)_{x,z_weighted_total}}{D.1_{x,z}} * 100$$

For year 2008, the EU-27 average of the coverage rate for ‘Compensation of employees’ is 87.5 % (Figure 15). 17 countries show coverage higher than the EU average, with the highest values for LU, CY and NL (more than 100 %). Most probably the relatively small size of the EU-SILC sample, and therefore the high sampling variability, explains the coverage rate for CY that is higher than 112 %.

To carry out the comparison of the income component wages and salaries, the coverage rate was calculated as set out in equation (2) except that employers’ social contributions (D12/RES) were excluded from the NA component and employers’ social insurance contributions (PY030G) were excluded from the EU-SILC component.

Gross operating surplus and mixed income

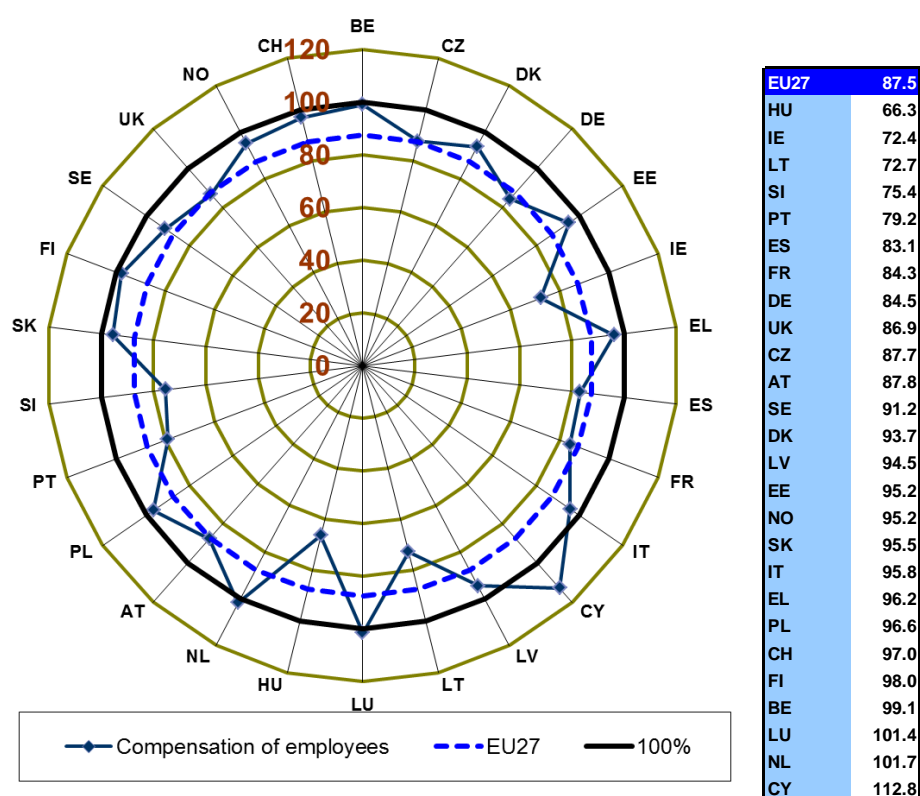
Table 8 compares the definitions of operating surplus (B.2), mixed income (B.3) with the information available in the EU-SILC dataset. For the a-minima exercise, a part of the income from rental of a property or land, which includes rents from dwellings, was added to the EU-SILC term of comparison. With regard to operating surplus and mixed income, equation (1) becomes:

$$3) \quad CR_{x,z} = \frac{(PY050G + PY070G + HY030G + p * HY040G)_{x,z_weighted_total}}{(B.2 + B.3)_{x,z}} * 100$$

where p is a coefficient that represents the share of HY040G that related to dwellings and was crudely

estimated by the a-minima exercise. A better estimate could be reached by working directly on the NA income specific sub-components that are currently produced at the country level, but are not available at the centralised level. The collection of this information has not been possible during the time available for the a-minima exercise.

Figure 15: Coverage rates for compensation of employees (2008)



The results of the comparison of operating surplus plus mixed income are shown in Figure 16. The European average coverage rate is 65.9 % and, therefore, lower than for D1. The cross-country variability of the coverage rate is very high for this income component. SK and DE have the least coverage, below 40 %, whereas CY, NO, SE, CH show rates greater than 110 %.

These differences are due to issues in both the datasets. On the micro side, two kinds of problem affect the collection of this information:

- the difficulty of including in the sample the highest incomes, (resulting in underestimation of self-employed income)
- when a set of accounts for the household is missing, the way this kind of data is collected is by self-declaration (no distinction of the different forms of income, or problems in estimating consumption of fixed capital, etc.). As a matter of fact, for a certain number of countries this self-declaration is based on an estimate made by the people interviewed on the amount drawn out from the business for personal use (e.g. Spain, Austria).

On the macro side, the NA data for this income component are counter-checked against information for other sectors to reach internal consistency and adjusted for exhaustiveness.

Table 8: Definitions for 'operating surplus and mixed income'

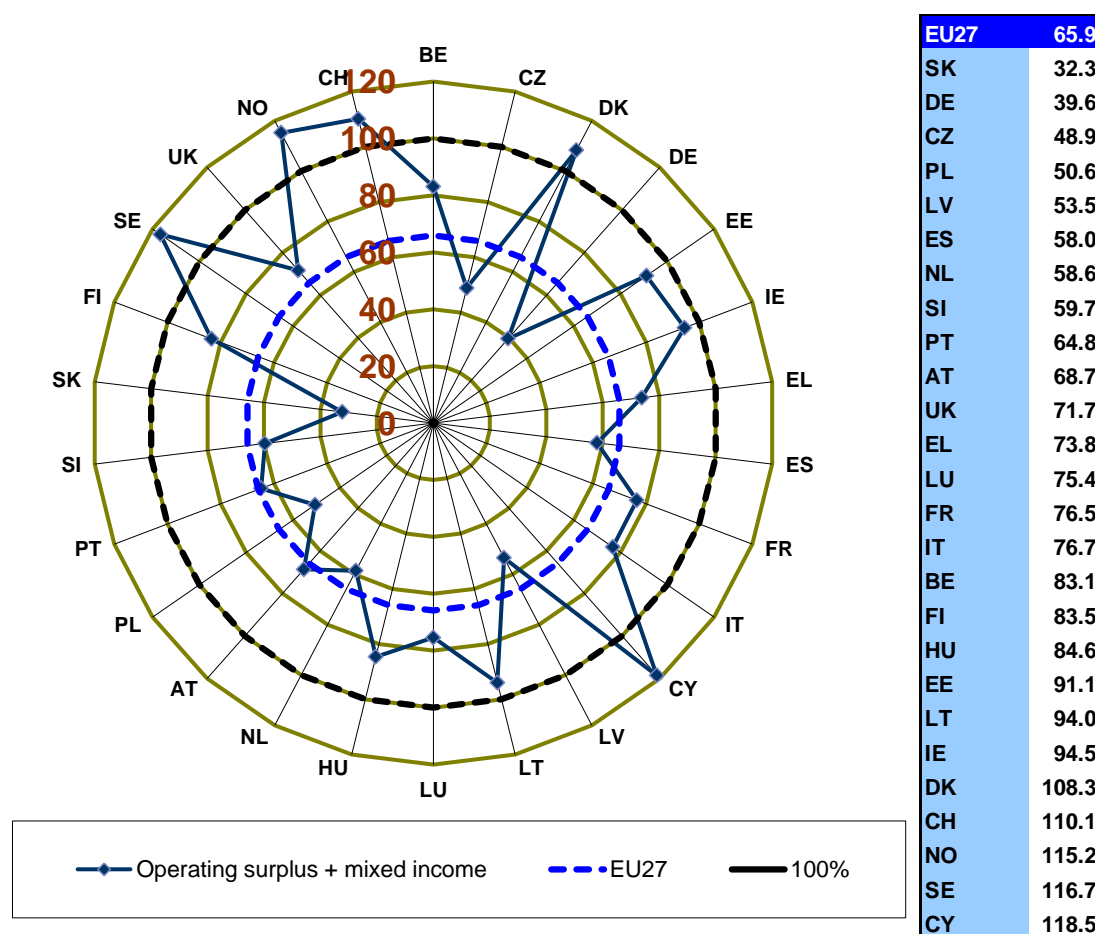
National Accounts (NA)	EU-SILC
<p>Operating surplus and mixed income (B.2 + B.3)</p> <p>Operating surplus (B2) Definition: 'income which the units obtain from their own use of their production facilities' (ESA95, §8.18); includes own-account production of accommodation services by owner-occupier households (ESA95, §8.20).</p> <p>Mixed income (B2) Definition: 'element corresponding to remuneration for work carried out by the owner or members of his family which cannot be distinguished from his profit as entrepreneur' (ESA95, §8.19)</p> <p>Components:</p> <ul style="list-style-type: none"> (+) market output (P.11) at basic price (+) output produced for own final use (P.12) (+) other non-market output (i.e. output provided for free or almost for free) (P.13) (-) intermediate consumption (P.2) (-) compensation of employees paid (D.1/USE) (-) other taxes on production paid (D.29/USE) (+) other subsidies on production (- D.39/USE) <p>Remarks: Goods and services produced and consumed within the same accounting period and within the same local kind-of-activity unit are not recorded as part of the output (ESA95, §3.14).</p> <p>Imputed rents included in NA refer only to dwellings owned by the households sector.</p> <p>P2 is adjusted for FISIM</p>	<p>Self-employment income</p> <p>Definition: 'Income received, during the income reference period, by individuals, for themselves or in respect of their family members, as a result of their current or former involvement in self-employment jobs, i.e. jobs where the remuneration is directly dependent upon the profits (or the potential of profits) derived from the goods and services produced (where own consumption is considered to be part of profits). The self-employed person makes the operational decisions affecting the enterprise, or delegates such decisions while retaining responsibility for the welfare of the enterprise. (In this context, 'enterprise' includes one-person operations.) The remuneration of hobbies shall be regarded as self-employment.'</p> <p>Components:</p> <ul style="list-style-type: none"> (+) market output (+) market value of goods and services bought for the unincorporated enterprise but consumed by the entrepreneur and his/her household members. (+) property income received in connection with financial and other assets belonging to the enterprise (-) intermediate consumption (-) compensation of employees (-) taxes on production and import taxes (-) interest paid on business loans (-) rents paid on land and other non-produced tangible assets rented by the enterprise (-) consumption of fixed capital (+) subsidies (=) <i>gross cash profits or losses from self-employment (including royalties) (PY050G)</i> (+) value of goods produced for own consumption (PY070G) (+) Income from rental of a property or land' (HY040G)) (EU-SILC Reg., Annex I, Art. 2.2) <p>(+) Imputed rent (HY030G) Definition: 'the value that shall be imputed for households that do not report paying full rent, either because they are owner-occupiers or they live in accommodation rented at a lower price than the market price, or because the accommodation is provided rent free'; only for dwellings (and associated buildings, such as garage) used as main residence by the households; paid for the 'due right to use an unfurnished dwelling (...) excluding charges for heating, water, electricity, etc.' (EU-SILC Reg., Annex I, Art. 2.3)</p> <p>Remarks: For the comparison with NA only the HY040G part related to dwellings should be included</p>

Notes: – Bold text indicates the main differences between EU-SILC and NA
 – EU-SILC Reg. stands for Commission regulation (EC) no 1980/2003 of 21 October 2003.

In addition, as Table 8 shows, there are large differences in the content of the two sources for this income component. For gross operating surplus and mixed income, the EU-SILC comparison item includes:

- property income received in connection with financial and other assets belonging to the enterprise (D.422 in NA)
- the deduction of part of business expenditure such as interest paid on business loans and consumption of fixed capital which are not included in the definitions of the EU-SILC variables;
- a different content of imputed rents. In NA, this component is usually calculated as a function of the stocks of dwellings that belong to households. Instead, in EU-SILC, the corresponding variable can refer to dwellings owned by a sector other than the household sector. For example, this is the case for households living in a dwelling owned by a cooperative that rents the house for a price lower than the market price (e.g. in SE). On the other hand, only the principal residence is included in EU-SILC whereas NA covers all the dwellings owned by the household;
- no adjustment for financial intermediate services indirectly measured (FISIM), for instance when a producer pays interest on a loan related to his business.

Figure 16: Coverage rates for operating surplus plus gross mixed income (2008)



Note: IT NA data for operating surplus plus mixed income include part of distributed income of corporations.

There are three adjustments that ideally should also be made to NA data, but this has not been possible during the time available to the a-minima project. These adjustments are:

- a) removal of consumption of fixed capital
- b) removal of the FISIM adjustments;

- c) inclusion of withdrawals from the income of quasi corporation (D.42part) in the comparison of operating surplus plus mixed income.

Regarding the first adjustment, the EU-SILC depreciation should not cover in theory the depreciation of owner-occupied dwellings which is the major part of consumption of fixed capital (K.1) for households in some countries. This topic needs further investigation but the split of the NA consumption of fixed capital for the part related to dwellings is not available. Information is missing for the second and third adjustments too.

However, information on D.42part are disseminated in a national publication of the Italian annual sectors accounts ⁽³²⁾, so the a-minima exercise has looked at making such an adjustment for Italian estimates only. For further information, see the section entitled ‘*The Italian case*’.

Property income received

Table 9 compares the definition of property income received (D.4/RES) to the information available in the EU-SILC dataset.

Table 9: Definitions for ‘property income received’

National Accounts (NA)	EU-SILC
Property income received (D.4/RES) Definition ‘income receivable by the owner of a financial asset or a tangible non-produced asset in return for providing funds to, or putting the tangible non-produced asset at the disposal of, another institutional unit’ (ESA95, §4.41) Components: (+) interest received (D.41/RES) (+) distributed income of corporations (D.42/RES) (+) property income attributed to insurance policy holders (D.44/RES) (+) rent received (D.45/RES) Remarks D41 is adjusted for FISIM	Property income Definition ‘the income received less expenses accruing, during the income reference period, by the owner of a financial asset or a tangible non-produced asset (land) in return for providing funds to or putting the tangible non-produced asset at the disposal of another institutional unit’ Components: (+) interest, dividends, profits from capital investment in an unincorporated business (HY090G) (EU-SILC Reg., Annex I, Art. 2.4) Remarks The part no related to dwellings of Income from rental of a property or land’ (HY040G) in NA is in Property income

Notes: – Bold text indicates the main differences between EU-SILC and NA.
 – EU-SILC Reg. stands for Commission regulation (EC) no 1980/2003 of 21 October 2003.

The NA term of comparison excludes property income attributed to insurance policy holders because no information is available in the EU-SILC dataset for this component.

As the NA adjustment for FISIM does not correspond to any equivalent adjustment in EU-SILC, the comparison was carried out with NA data for interest before any FISIM adjustment (gross interest flows). For this component, the coverage is calculated using the following formula:

$$4) \quad CR_{x,z} = \frac{(HY090G + (1 - p) * HY040G)_{x,z_weighted_total}}{(D.41_{no_FISIM_adj} + D.42 + D.45)_{x,z}} * 100$$

where p is still the coefficient that represents the estimated HY040G part related to dwellings.

For the year 2008, the coverage rate is poor with an average value of 28.1 % for the EU-27. For 7

⁽³²⁾ In Italy, productive units which do not have the legal status of corporations, but are not classified as producer households either, are considered as quasi-corporations and are included in the corporations sector. Then, an item called “other withdrawals from corporation’s income (D.423)” and publicly available (<http://www.istat.it/it/archivio/33602>) was introduced to take into account their income. This item was used in the Italian comparison.

countries, the rate is less than 10 % (the minimum coverage was 4.6 % for SK). The coverage rate is higher than 50 % for only 5 countries, the highest being for FR, at 108.9 % (Figure 17).

The reasons behind this generally-poor coverage are similar to the ones presented for the income component operating surplus plus mixed income.

The French case

Figure 18 seems to identify French coverage as an outlier, but in reality this coverage is due to the specific way of collecting and improving micro data adopted by FR: the French EU-SILC variables are adjusted using most of the same data sources as are used in compiling for the NA component⁽³³⁾.

As a matter of fact, the HY090 variable contains:

- all information about property income which is declared to the Tax Administration (by linkage with tax registers);
- imputation of annual income using external sources such as the Household Wealth Survey and data from the French Central Bank for some financial products, such as equity savings plans or exempt savings accounts.

The Italian case

As already noted in the comparison of the previous income component, EU-SILC data on self-employment income include the amount classified by NA as part of ‘withdrawals from the income of quasi corporation (D.42part)’. An adjustment is therefore required to bring the two datasets further into line with each other, but the detail for D.42part is not available in the dataset held by Eurostat.

Applying the adjustment for D.42part, equation (3) becomes:

$$CR_{x,z} = \frac{(PY050G + PY070G + HY030G + p * HY040G)_{x,z_weighted_total}}{(B.2 + B.3 + D.42part)_{x,z}} * 100.$$

This kind of adjustment increases the denominator of equation (3) and therefore results directly in a reduction of the coverage rate.

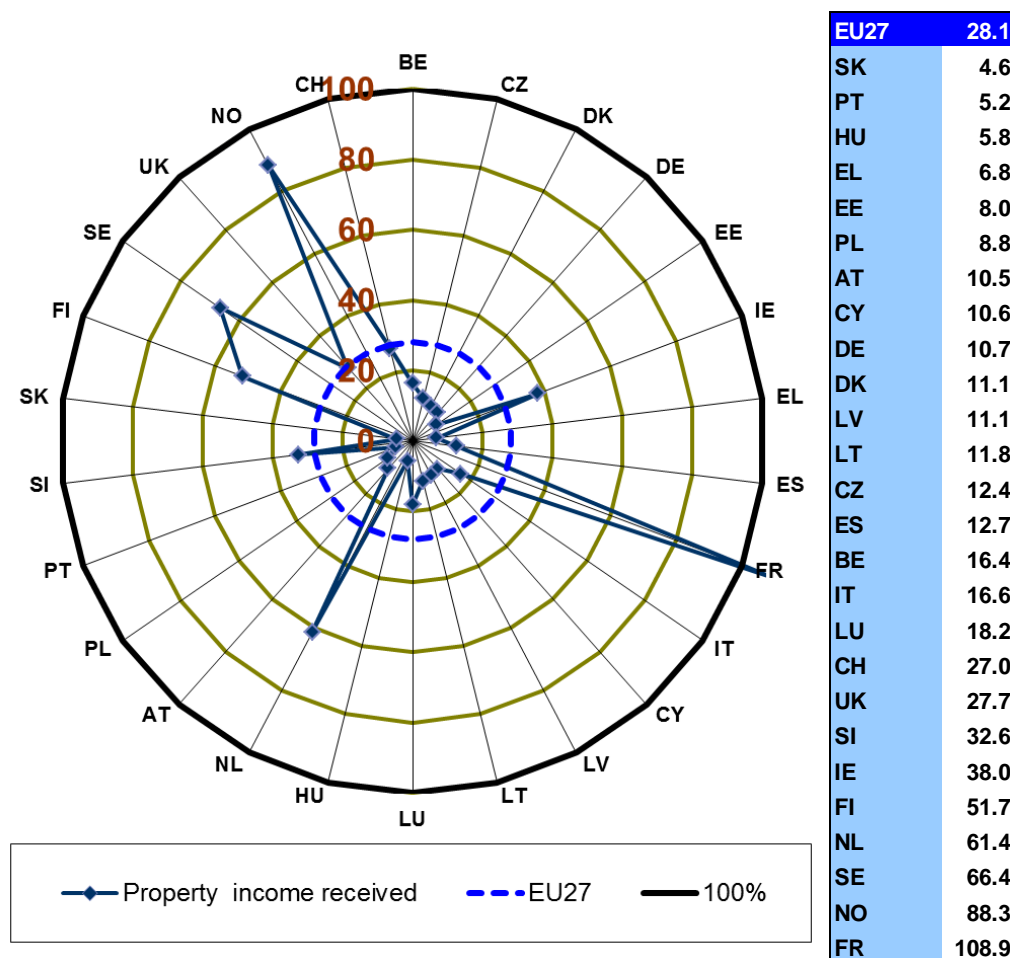
Equation (4) would become

$$CR_{x,z} = \frac{(HY090G + (1 - p) * HY040G)_{x,z_weighted_total}}{(D.41_{no_FISIM_adj} + D.42 + D.45 - D.42part)_{x,z}} * 100$$

Where p is a coefficient for the HY040G part related to dwellings calculated as explained before.

For Italy, when this adjustment is made, the coverage rate for property income (now net of D.42part) increases by 9 percentage points, whereas the coverage rate for ‘operating surplus plus mixed income’ (plus D.42part) decreases by 25 percentage points, bringing NA variables closer to EU-SILC totals.

⁽³³⁾ National accounts use data from fiscal registers and data from the French Central Bank.

Figure 17: Coverage rates for property income received, before FISIM allocation (2008)


Note: IT NA data for property income received exclude part of distributed income of corporations.

Social benefits other than social transfers in kind (received)

Detailed information on social benefits other than social transfers in kind (D.62), hereafter referred to more simply as social benefits in cash, is available in the EU-SILC dataset. The EU-SILC variables related to social benefits in cash are shown in Table 10, where they are also compared to NA definitions.

For social benefits in cash equation (1) becomes:

$$5) CR_{x,z} = \frac{(HY050G + HY060G + PY090G + PY100G + PY110G + PY120G + PY130G + PY140G)_{x,z_weighted_total}}{(D62)_{x,z}} * 100$$

Figure 18 shows the coverage rate varying from 61.5 % for EL to 94.5 % for IE with an EU-27 average of 84.3 %.

During the a-minima exercise, two issues related to social benefits in cash arose. The first issue concerns the way of recording housing allowance in NA, the second issue is related to pensions from individual private plans.

Table 10: Definitions for ‘social benefits other than social transfers in kind’

National Accounts (NA)	EU-SILC
<p>Social benefits other than social transfers in kind (D.62/RES) ⁽³⁴⁾</p> <p>Definition: ‘Social benefits are transfers to households, in cash or in kind, intended to relieve them from the financial burden of a number of risks or needs, made through collectively organised schemes, or outside such schemes by government units and NPISHs’; include payments from general government to producers which individually benefit households and which are made in the context of social risks or needs. (ESA95, §4.83)</p> <p>List of covered risks or needs:</p> <ul style="list-style-type: none"> • sickness; • invalidity, disability; • occupational accident or disease; • old age; • survivors; • maternity; • family; • promotion of employment; • unemployment; • housing; • education; • general neediness. <p>(ESA95, §4.84)</p> <p>Components:</p> <p>(+) social security benefits in cash (D.621) (payable by social security funds)</p> <p>(+) private funded social benefits (D.622) (payable in cash or in kind, mostly by insurance enterprises)</p> <p>(+) unfunded employee social benefits (D.623) (payable by employers)</p> <p>(+) social assistance benefits in cash (D.624) (payable by government units or NPISHs to meet the same needs as social insurance benefits but which are not made under a social insurance schemes) (ESA95, §4.103)</p>	<p>Social benefits</p> <p>Definition: ‘current transfers received by households during the income reference period and intended to relieve them from the financial burden of a number of risks or needs, made through collectively organised schemes, or outside such schemes by government units or NPISHs’; restricted to cash benefits (except housing benefits); include the value of social contributions and income tax payable on the benefits by the beneficiary; must be compulsory and based on the principle of social solidarity.</p> <p>Components:</p> <p>(+) family/children-related allowances (HY050G)</p> <p>(+) unemployment benefits (PY090G)</p> <p>(+) old-age benefits (PY100G)</p> <p>(+) survivors’ benefits (PY110G)</p> <p>(+) sickness benefits (PY120G)</p> <p>(+) disability benefits (PY130G)</p> <p>(+) education-related allowances (PY140G)</p> <p>(+) social exclusion not elsewhere classified (HY060G).</p> <p>(+) housing allowances (HY070G)</p> <p>(EU-SILC Reg., Annex I, Art. 2.5.1)</p>
<p>Remarks Housing allowances are included in D62 by some EU-27 members</p>	

- Notes: – Bold text indicates the main differences between EU-SILC and NA.
 – EU-SILC Reg. stands for Commission regulation (EC) no 1980/2003 of 21 October 2003.
 – In EU-SILC private funded social benefits in cash can be recorded in ‘gross cash or near-cash employee income PY010’ if they cannot be separately and clearly identified as social benefits. PY010 is already included in the compensation of employees comparison.

Social benefits other than social transfers in kind and housing allowances

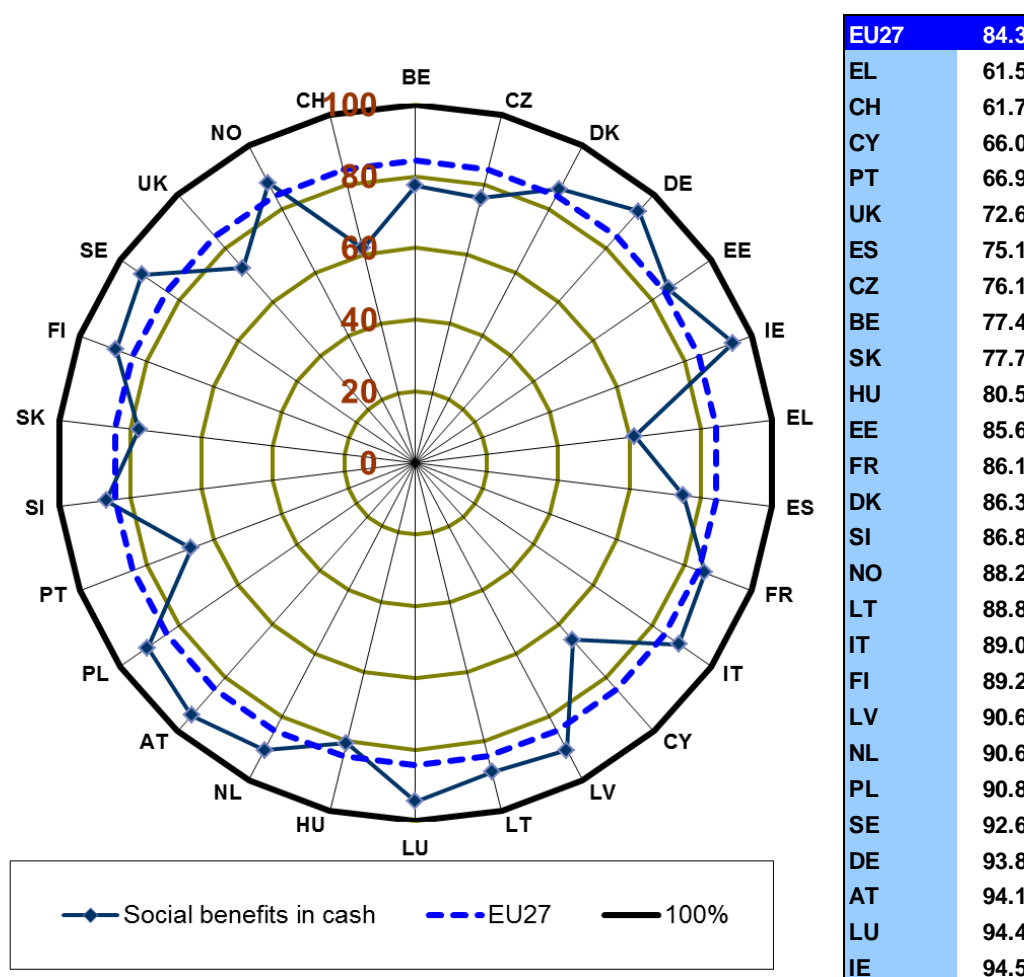
Regarding the first issue, the EU-SILC variable ‘housing allowances’ has been excluded from the comparison in order for social benefits in cash to be consistent with the European System of integrated Social PROtection Statistics (ESSPROS) and with the SNA93 recommendation to record them as social transfers in kind.

However, the exchange of information with NA experts has identified the fact that the NA treatment of housing allowances is not the same in all countries. For example, in Italy, this allowance is recorded in D.62 whereas in France it is considered to be part of social transfers in kind (D.63). Therefore in the a-

⁽³⁴⁾ The ESA95 definition refers to social benefits in general, in other words it refers to both “social benefits other than social transfers in kind” and to “social transfers in kind” however only the former are included in disposable income.

minima exercise, for those countries that confirmed that they had treated these allowances in the same way as Italy, the EU-SILC value for housing allowances has been added to the numerator of equation (5). Conversely, for the other countries, this value is not included in the calculation of the coverage rate for social benefits other than social transfers in kind.

Figure 18: Coverage rates for social benefits other than social transfers in kind (2008)



Social benefits other than social transfers in kind and pensions from individual private plans

The second issue is trickier. The EU-SILC variable ‘pensions from individual private plans (PY080)’ includes data on annuities received by the beneficiaries of private insurance other than social ones (Table 11). The definition covers old age, survivors, sickness, disability and unemployment pensions in the form of interest and dividends from insurance other than social (life and non-life insurance).

According to the EU-SILC methodology and from a micro point of view⁽³⁵⁾ in general, these benefits/annuities should be treated as property income and as such should be part of the income definition. And from the 2010 data collection onwards, PY080G is included in the EU-SILC ‘total disposable income’ variable, HY020.

In order to be consistent with NA, PY080G should not be included in the comparison except for the part concerning annuities from non-life insurance (D.72) because benefits from life-insurance are considered to be financial items. Various countries have instead asked to include it in the a-minima comparison and one country has confirmed that to some extent private insurance (other than social) is recorded in its NA data (item D.622).

⁽³⁵⁾ From the micro point of view only annuities related to life insurance (old-age and survivors’ pensions) are part of income. See for example the paragraph 2.3.2 Property income in the Canberra Group Handbook on Household Income Statistics, Second Edition (2011).

Table 11: EU-SILC definition of ‘regular pensions from individual private plans’

<p>Regular pensions from individual private plans (other than those covered under ESSPROS) (PY080G)</p> <p>Regular pensions from private plans (other than those covered under ESSPROS) refer to pensions and annuities received, during the income reference period, in the form of interest or dividend income from individual private insurance plans, i.e. fully organised schemes where contributions are at the discretion of the contributor independently of their employers or government.</p> <p>It includes:</p> <ul style="list-style-type: none"> — Old age, survivors, sickness, disability and unemployment pensions received as interest or dividends from individual insurance private plans. <p>It excludes:</p> <ul style="list-style-type: none"> — Pensions from mandatory government schemes. — Pensions from mandatory employer-based scheme <p>(EU-SILC Reg., Annex I, Art. 5.2)</p>
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Note: EU-SILC Reg. stands for Commission regulation (EC) no 1980/2003 of 21 October 2003.

Other receipts

EU-SILC does not collect suitable information on the individual items that make up the rest of what is defined to be income in NA, which have been grouped together to form this income item ‘other receipts’. These individual items are as follows:

- Social contributions received
- Non-life insurance claims
- Miscellaneous current transfers received.

The first item, not covered at all by EU-SILC, is related to employers’ social contribution received by households because their activity as employers.

For the income component non-life insurance claims (Table 12), the part related to sickness, disability and unemployment pensions is recorded in PY080G but PY080G also includes annuities from life-insurance that in NA are considered to be part of the financial accounts.

For the component miscellaneous current transfers (D75):

- a) EU-SILC collects no information on the transfers associated with lotteries and gambling, and with compensation payments.
- b) information on current cash transfers between households coming from abroad are combined in EU-SILC with current national cash transfers between households in a variable called regular inter-household cash transfers received (HY080G).

Table 12: Definitions for ‘non-life insurance claims’

<p>National Accounts (NA)</p>
<p>Non-life insurance claims (D.72/RES)</p> <p>‘claims due under contracts in respect of non-life insurance; that is, the amounts which insurance enterprises are obliged to pay in settlement of injuries or damage suffered by persons or goods’ (ESA 1995, §4.112)</p>

Note: Bold text indicates the main differences between EU-SILC and NA.

For this reason, in the a-minima exercise, Eurostat tentatively started comparing NA D.75 with the EU-SILC variable HY080G, which is set out in Table 13. However, following the advice of EU-SILC experts that the two items were not comparable, no further work has been carried out on this.

Table 13: Definitions for ‘miscellaneous current transfers received’

National Accounts (NA)	EU-SILC
Miscellaneous current transfers received (D.75/RES) Components: (+) current transfers between households: all current transfers (in cash or in kind) or received from other households (+) transfers in the scope of lotteries and gambling (+) compensation payments (+) other (ESA95, §4.125-136) Remarks: Inter-household transfers between resident households cancel out at the macro level	(+) Regular inter-household cash transfers received (HY080G) ‘regular money amounts received, during the income reference period, from other households or persons’; does not include subsidised housing. Components: (+) compulsory alimony and child support (+) voluntary alimony and child support (+) regular cash support from persons other than household members (+) regular cash support from households in other countries. (EU-SILC Reg., Annex I, Art. 2.5.2) Remarks: EU-SILC records inter-household transfers only if they are in cash (in contrast to NA).

Notes: – Bold text indicates the main differences between EU-SILC and NA.
 – EU-SILC Reg. stands for Commission regulation (EC) no 1980/2003 of 21 October 2003.

Property income paid

In Table 14, the definitions for property income paid for NA are compared to the definitions of the available information in the EU-SILC dataset.

As with the treatment on the resources side; the data on interest paid (D.4/USE) that has been taken from the NA is the version that includes no adjustment for FISIM.

For property income on the use side, the coverage rate is calculated as follows:

$$6) \quad CR_{x,z} = \frac{HY110G_{x,z_weighted_total}}{(D4_{no_FISIM_adj})_{x,z}} * 100.$$

Figure 19 shows the results of this comparison. The coverage rate for this income component is generally low, with the exception of NO (61.6 %), UK (72.3 %) and NL (79.5 %). The European average is 39.2 % and for some countries, the coverage rate is close or equal to zero (DE, CH and CZ). Nordic countries show coverage rates that are higher than the EU-27 average.

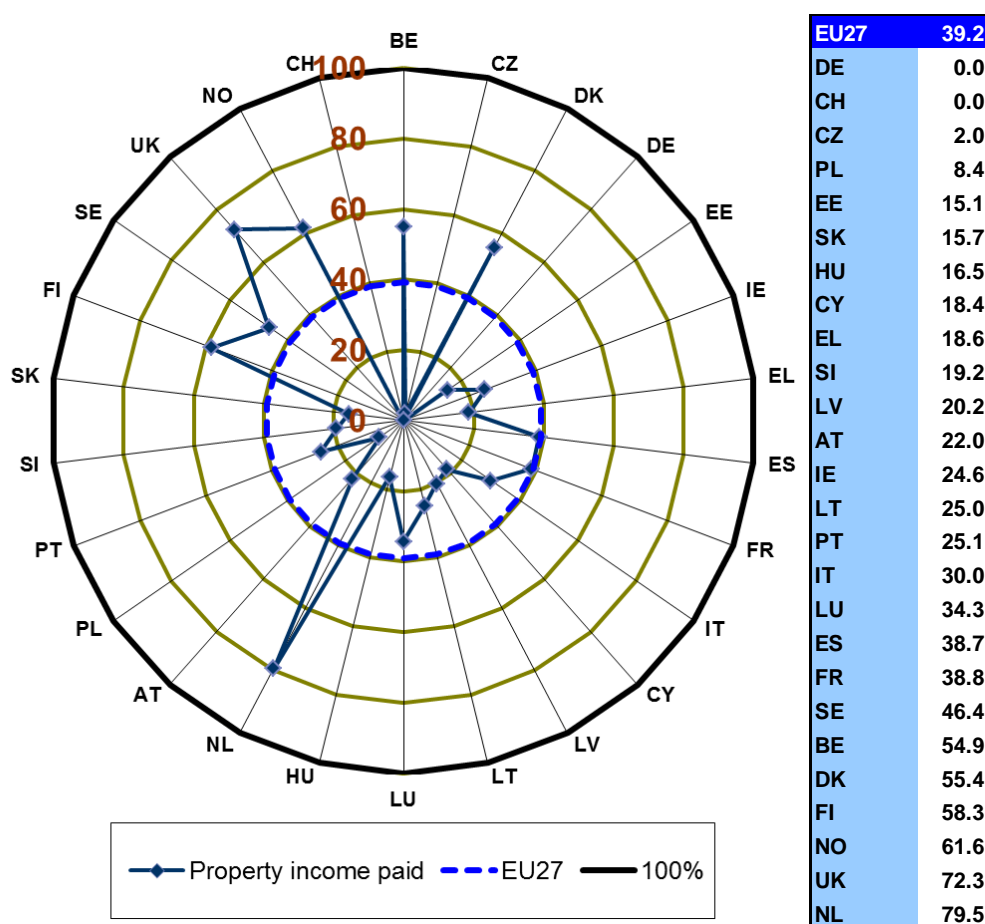
Table 14: Definitions for ‘property incomes paid’

National Accounts (NA)	EU-SILC
Property income paid (D.4/USE) Components: (+) interest paid (D.41/USE) (among them consumption credits) (+) rent paid (D.45/USE)	Interest paid on mortgage (HY100G) ‘total gross amount, before deducting any tax credit or allowance, of mortgage interest on the main residence of the household during the income reference period’ (EU-SILC Reg., Annex I, Art. 2.7.1) Remarks: Rent paid on land and interest paid on business loans by the enterprise of self-entrepreneurs are subtracted under ‘self-employment’, see Table 8.

Notes: – Bold text indicates the main differences between EU-SILC and NA.
 – EU-SILC Reg. stands for Commission regulation (EC) no 1980/2003 of 21 October 2003.

There may be two causes for such low coverage: one is that the EU-SILC data include interest paid on mortgages only (and not on other loans, as is the case in NA); and the second is, as we have seen in Table 8, that in EU-SILC property income paid by self-entrepreneurs in the context of their business activity has to be subtracted from the EU-SILC variable for self-employment income. This part of property income is recorded in NA as rent paid on land and interest paid on business loans.

Figure 19: Coverage rates for property income paid without any adjustment for FISIM (2008)



Taxes on income and wealth and social contributions

As EU-SILC does not collect information separately on (i) taxes on income and wealth and (ii) social contributions (see Table 15), a comparison of the separate income components is not possible with the information available in Eurostat.

Table 15: Definitions for ‘taxes on income and wealth plus social contributions’

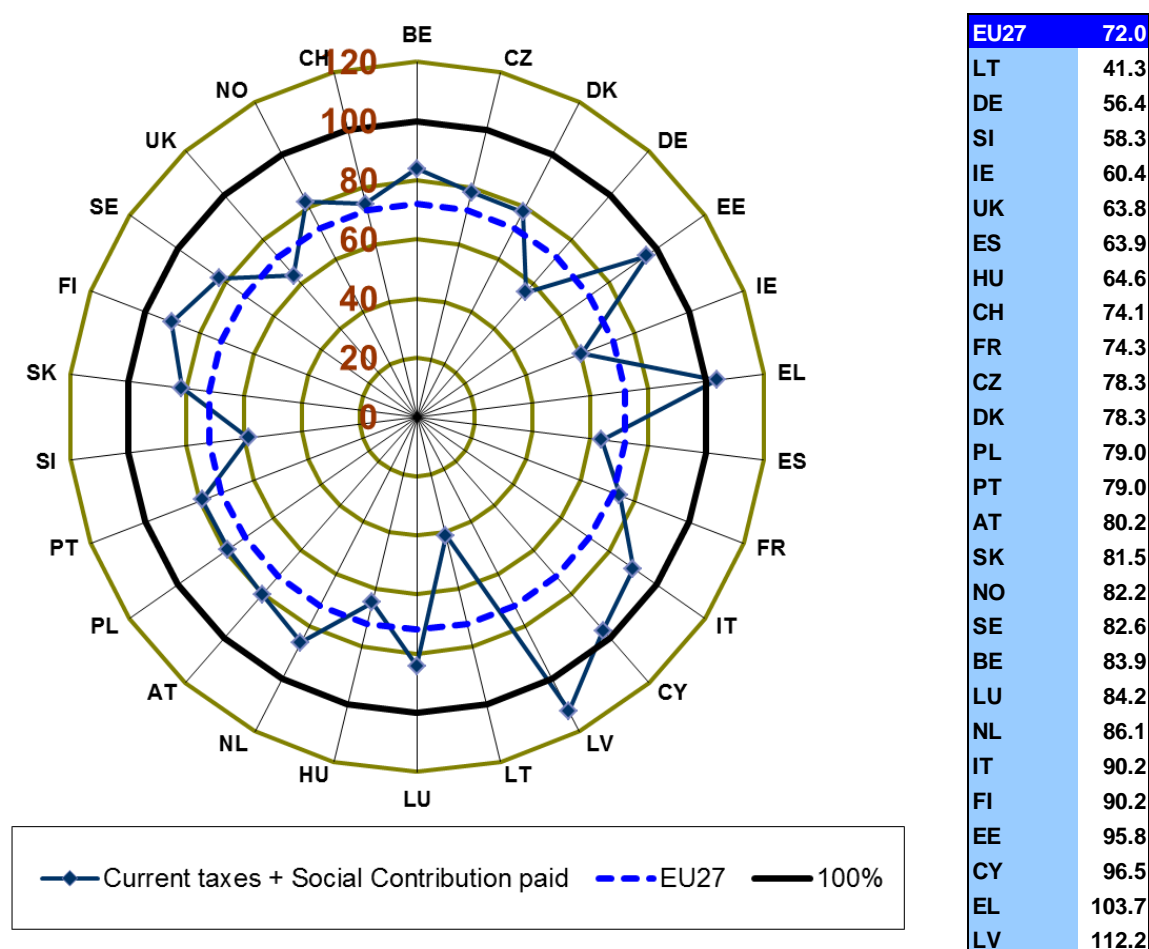
National Accounts (NA)	EU-SILC
<p>Taxes on income (D.51/USE) Definition: ‘consist of taxes on income profits and capital gains’; assessed on the actual or presumed incomes of individuals, households, corporations, or NPIs; include taxes assessed on holdings of property, land or real estate when these holdings are used as a basis for estimating the income of their owners. (ESA95, §4.78)</p> <p>Social contributions (D.61/USE) Components: employers actual and imputed social contributions (D.6111/USE + D.612/USE) employees’ social contributions (D.6112/USE) social contributions by self- and non-employed persons (D.6113/USE) (ESA95, §4.92-102)</p> <p>Remarks: Employers’ social contributions (D.6111/USE + D.612/USE) are included in social contributions, but the same amount is added as part of employee income (D.12/RES), see above.</p>	<p>Tax on income and Social insurance contributions (HY140G) Definition: ‘refers to taxes on income, profits and capital gains’; assessed on the actual or presumed income of individuals, households or tax-unit; include taxes assessed on holdings of property, land or real estate when these holdings are used as a basis for estimating the income of their owners. (EU-SILC Reg., Annex I, Art. 2.8.1)</p> <p>‘employees’, self-employed, unemployed, retirement and any other contributions (if applicable) paid during the income reference period to either mandatory government or employer-based social insurance schemes (pension, health, etc.)’ (EU-SILC Reg., Annex I, Art. 2.8.1) employers’ social insurance contributions (PY030G)</p> <p>Remarks: Employers’ social insurance contributions are included in employee income (see above) and deducted in the calculation of disposable income (EU-SILC Reg., Annex I, Art. 4.2)</p>
<p>Other current taxes (D.59/USE) Components: current taxes on capital: taxes payable periodically on the ownership or use of land or buildings by owners; current taxes on net wealth and other assets, not mentioned in D.29 or D.51 poll taxes, levied per adult or per household, independently from income or wealth expenditure taxes payments for licences, i.e. to own or use vehicles taxes on international transactions (ESA95, §4.79)</p>	<p>Regular taxes on wealth (HY120G)</p> <p>‘taxes that are payable periodically on the ownership or use of land or buildings by owners and current taxes on net wealth and on other assets (jewellery, other external signs of wealth)’ (EU-SILC Reg., Annex I, Art. 2.8.2)</p>

Notes: – Bold text indicates the main differences between EU-SILC and NA.
 – EU-SILC Reg. stands for Commission regulation (EC) no 1980/2003 of 21 October 2003.
 – Taxes on income and wealth are made by the sum of D.51 and D.59.

For this income component, equation (1) becomes:

$$7) \quad CR_{x,z} = \frac{(HY140G + HY120G + PY030G)_{x,z_weighted_total}}{(D.5USE + D.61USE)_{x,z}} * 100$$

Results of the comparison for current taxes and social contribution, that include D61, are shown in Figure 20. For all the 26 countries analysed, the coverage rate seems to be medium high with a EU-27 average of 72.0 %. LT, DE and SI have the worst coverage rates with values of respectively 41.3 %, 56.4 % and 58.3 %. The coverage rates for EE, CY and EL seem to be quite good, with coverage of 95.8 % and 96.5 % for the first two and 103.7 % for EL. The coverage rate for LV is the highest, at 112.2 %.

Figure 20: Coverage rates for current taxes and social contribution (2008)


To carry out the comparison of current taxes and social contribution; equation (7) was applied, but with the exclusion, from the NA social contribution, of employers' social contributions (D12/RES) and, from the EU-SILC side, of employers' social insurance contributions (PY030G).

Other expenditure

EU-SILC does not provide suitable information on the individual items that make up the rest of what is defined to be income in NA, which have been grouped together to form this income item 'other expenditures'.

These individual items are as follows

- Social benefits other than social transfers in kind paid
- Net non-life insurance premiums
- Miscellaneous current transfers, paid.

The first item, not covered by EU-SILC, includes unfunded employee social benefits (D.623), payable by households as employers and is defined like in Table 10.

For the NA income component net non-life insurance premiums (defined in Table 16), the part related to contributions to sickness, disability and unemployment insurance is recorded in EU-SILC variable PY035G but it is combined with contributions for life-insurance (which is considered a financial item in NA).

Table 16: NA definition for ‘Net non-life insurance premiums’

National Accounts (NA)
<p>Net non-life insurance premiums (D.71/USE) ‘premiums payable under policies taken out by institutional units (...) on their own initiative and for their own benefit, independently of their employers or government and outside any social insurance scheme.’ Comprise:</p> <ul style="list-style-type: none"> — actual premium payable by policy holders to obtain insurance cover (premiums earned); — premium supplements payable out of the property income attributed to insurance policy holders, after deducting the service charges of insurance enterprises arranging the insurance. <p>(ESA 1995, §4.109)</p>

Note: Bold text indicates the main differences between EU-SILC and NA.

As was the case for the same component on the transfers received side, experts have suggested that any comparison of the part of miscellaneous current transfers (D.75/USE) which is inter-household cash transfers would be plagued by too many difficulties. As such, the a-minima comparison has been performed without directly comparing D75/USE with HY130G (see Table 17 for a detailed analysis).

Table 17: Definitions for ‘Miscellaneous current transfers, paid’

National Accounts (NA)	EU-SILC
<p>Miscellaneous current transfers paid (D.75/USE) Components:</p> <ul style="list-style-type: none"> — current transfers (in cash or in kind) or paid to other households — transfers in the scope of lotteries and gambling — payments of compensation — other <p>(ESA95, §4.125-136)</p> <p>Remarks: Inter-household transfers cancel out at the macro level</p>	<p>Regular inter-household cash transfers paid (HY130G) ‘regular monetary amount paid, during the income reference period, to other households’. Components:</p> <ul style="list-style-type: none"> — compulsory alimony and child support — voluntary alimony and child support paid on a regular basis — regular cash support to persons other than household members — regular cash support to households in other countries <p>Remarks: EU-SILC records inter-household transfers only if they are in cash (in contrast to NA).</p>

Notes: – Bold text indicates the main differences between EU-SILC and NA.
 – EU-SILC Reg. stands for Commission regulation (EC) no 1980/2003 of 21 October 2003.

Annex 3: Property income imputation for Italy

The a-minima exercise imputed property income for Italy in EU-SILC, completely replacing the information collected by the survey.

To perform the comparison, the data for Italy have been corrected for some of the following content characteristics:

- (i) the NA component withdrawals from the income of quasi corporation has been moved to operating surplus and mixed income;
- (ii) the NA component property income attributed to insurance policy holders has been subtracted; and
- (iii) the FISIM adjustment to interest has been reallocated

Despite these corrections, the coverage rate of EU-SILC on NA data for property income remains poor because differences remain between the two data sources, such as:

- the lack of information on interest paid on business loans, which has already been taken into account either by subtracting it from the EU-SILC variables gross cash profits or as losses from self-employment (including royalties);
- the adjustments adopted in NA to reach internal consistency and exhaustiveness.

Given this poor coverage, and making the hypothesis that the main problems are in micro information on income from financial assets/liabilities, additional information was sought as part of the a-minima exercise on property income and financial wealth. Some additional information was found in the publicly-available Bank of Italy Survey on Household Income and Wealth (BI_SHIW), which is part of the Eurosystem's Household Financial and Consumption Survey (HFCS) launched by the European Central Bank.

This survey reports indirect information on property income, which has been estimated by means of data collected on financial assets and liabilities. In the a-minima exercise, the latter information was used to impute EU-SILC micro information on property income. The Bank of Italy data on financial assets and liabilities show a greater degree of alignment with NA data than the limited alignment with EU-SILC data on property income.

This imputation has been carried out in three steps. The first step involved classifying EU-SILC and Bank of Italy data jointly by household type (HT) and equivalised income-other than property income-quintile (EIQ_other)⁽³⁶⁾⁽³⁷⁾, following the methodology established by the EGDNA. The population of each dataset is therefore divided into 40 fairly large subgroups according to the combination of values of the two classification variables : HT (values 1 to 8) and EIQ other (values 1 to 5).

The second step involves the estimation of the share, Sh_x , of financial assets/liabilities owed by each household x out of the weighted total coming from the Bank of Italy survey as follows

$$(8) \quad Sh_x = \frac{FA_{x,BI}}{\sum_{x \in sample} FA_{x,BI} * weight_BI_x}$$

where $weight_BI_x$ is the weight for household x in the BI_SHIW sample and $FA_{x,BI}$ is the amount of financial assets owned by the household.

Then the amount of financial assets/liabilities owed by each household has been estimated in the BI_SHIW by HT and by EIQ_other by calculating the weighted average value of this share in each

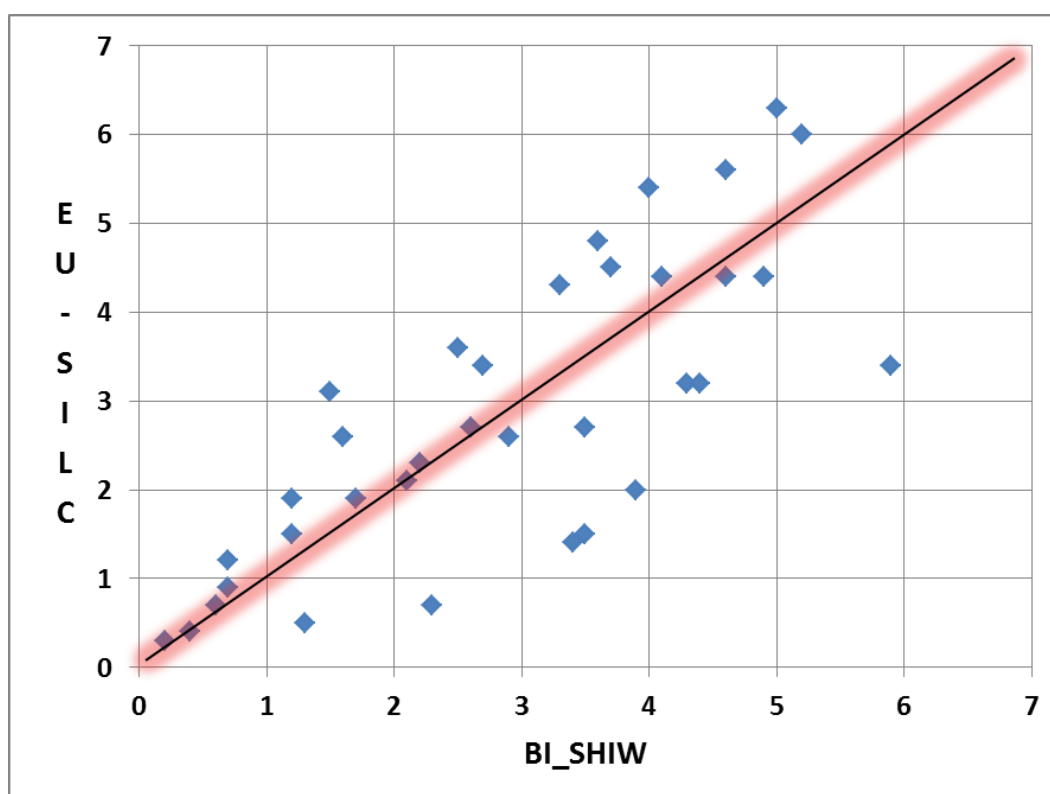
⁽³⁶⁾ The concept of "income-other than property income" adopted in this imputation needs caveating because the Bank of Italy data are net of taxation while the (official) EU-SILC variables are gross. The EU-SILC variable "regular taxes on wealth" has been used to bring the income definitions in the two surveys closer, but this variable does not include taxation on property income. This caveat will disappear when HFCS gross (of taxation) data are available.

⁽³⁷⁾ The a-minima exercise has excluded property income from the equivalised income as this the component that should be imputed.

combination of HT and EIQ_other. Equation (9) provides the calculation of the average percentage $\overline{Sh}_{ht,eq}$ for a household x that belongs to the HT ht and to the EIQ_other eq :

$$(9) \quad \overline{Sh}_{ht,eq} = \frac{\frac{1}{\sum_{x \in ht,eq} weight_BI_x} \sum_{x \in ht,eq} FA_{x,BI} * weight_BI_x}{\sum_{x \in sample} FA_{x,BI} * weight_BI_x}$$

Figure 21: Households distribution by combination of HT and EIQ_other (%) — comparison of EU-SILC and BI_SHIW



As the distributions of the households in the BI and EU-SILC samples show a positive correlation ($R^2=+0.78$) for the variable obtained by combining HT and EIQ other, the BI_SHIW average share has been acceptably assigned to the EU-SILC household sample according to their classification by HT and by EIQ other.

The third step involves calculating new EU-SILC variables on property income in the resources and use sides by multiplying the NA amount of property income by the share $\overline{Sh}_{ht,eq}$ corrected by a factor that takes into account the different weights of the two surveys.

If we indicate the EU-SILC sample weights with $weight_SILC_x$ and the NA value for property income with $D4_{NA}$, equation (10) sets out the calculation for household x that belongs to ht,eq :

$$(10) \quad D4_{x_ht,eq} = D4_{NA} * \overline{Sh}_{ht,eq} * \frac{\sum_{x \in ht,eq} weight_BI_x}{\sum_{x \in ht,eq} weight_SILC_x}$$

This imputation is straightforward and can be easily replicated when HFCS data are available at least for the Euro Area countries; it can be re-worked once the adjustments/imputation agreed by the EGDNA have been made to the data.

However, it should be noted that several assumptions have needed to be made. Most importantly, it has been assumed that the definition of financial assets/liabilities for the BI_SHIW is consistent with the NA definition, and that the return on each financial asset is in proportion to its value with a rate equal across all assets.

Moreover, it should be noted that this imputation does not necessarily represent reality but only spreads the value of the NA item across the EU-SILC sample on the basis of the supplementary information from the BI_SHIW.

At the moment, this imputation is only a better alternative than simply distributing property income equally across households or in proportion to the amount that households have already declared in the EU-SILC survey. However, as in the future, more accurate results for all EU countries are expected from the HFCS, this imputation could lead to better estimates.

At the time of writing this report, the HFCS data have already been cross-checked and compared with NA and with EU-SILC data for a certain number of countries. This comparison has given rise to the ECB intention to work and reconcile differences between the HFCS and NA estimates. These considerations are reported in the 2013 document produced by the Household Finance and Consumption Network available at the following link:

<http://www.ecb.int/pub/pdf/other/ecbsp2en.pdf>.

Annex 4: Expert Group on disparities in a National Accounts framework

Income components list

Label	SNA/ESA codes
Wages and salaries	<i>D11R</i>
Actual social contributions	<i>D121R</i>
Imputed social contributions paid by firms	<i>D122R</i>
Mixed income (excluding adjustment for underground production and own account production)	<i>Part of B3</i>
Mixed income from underground production	<i>Part of B3</i>
Mixed income from own-account production	<i>Part of B3</i>
Operating surplus from leasing of dwelling	<i>Part of B2</i>
Operating surplus from owner occupied dwelling	<i>Part of B2</i>
Property income received (excluding FISIM and income attributed to insurance policy holders)	<i>Part of D4R (part of D41R+D42R+D45R)</i>
Property income received attributed to insurance policy holders	<i>Part of D4R (D44R)</i>
Property income paid (excluding FISIM)	<i>Part of D4P (part of D41P+D45P)</i>
FISIM	<i>Part of D4R and D4P</i>
Social benefits received	<i>D62R</i>
Current taxes on income and wealth paid	<i>D5P</i>
Actual social contributions paid by households	<i>D611P</i>
Imputed social contributions paid by households	<i>D612P</i>
Other current transfers (received minus paid, excluding non-life insurance claims and premiums)	<i>D75R-D75P</i>
Transfers between resident households	-
Net non-life insurance premiums minus claims	<i>D72R-D71P</i>
Social transfers in kind received from the government – Health	<i>Part of D63R</i>
Social transfers in kind received from the government - Education	<i>Part of D63R</i>
Social transfers in kind received (other than education and health received from the government, including all Stikprovided by NPISHs)	<i>Part of D63R</i>
Adjusted disposable income	<i>Aggregate of the above components</i>

Micro cash disposable income

1	Wages and salaries
	<p>It consists of payments, in cash or in kind, received by individuals as results of their involvement in paid jobs.</p> <p>It includes direct wages and salaries for time worked and work done, cash bonuses and gratuities, commissions and tips, directors' fees, profit-sharing bonuses and other forms of profit related pay, remuneration for time not worked such as for annual leave, holidays or other paid leave, share entitlements, free or subsidised goods and services from an employer. It also includes severance and termination pay.</p> <p>It excludes social insurance contributions made by employers to secure social benefits for their employees.</p>
2	Income from self-employment
	<p>Income from self-employment is income received by individuals as a result of their involvement in self-employment jobs. Net income from self-employment includes the profit or loss that accrues to owners of, or partners in, unincorporated enterprises who work in these enterprises.</p> <p>The basis for the measurement of income from self-employment in household income statistics is the concept of 'net' income, that is, the value of gross output less operating costs (including interests and dividends paid) and after adjustment for depreciation of assets used in production.</p> <p>It excludes profits or losses from the capital investment of partners who do not work in these enterprises ('silent' partners) which are included in property income.</p> <p>It includes the estimated value of goods and services produced for barter, as well as goods produced for own consumption, less expenses.</p>
3	Property income (net, received minus paid)
	<p>Property income is defined as receipts that arise from the ownership of assets (return for use of assets) provided to others for their use. They comprise returns, usually monetary, from financial assets (interest, dividends), from non-financial assets (rent) and from royalties (return for services of patented or copyrighted material).</p> <p>— <i>Interest</i> receipts are payments received from accounts with banks, building societies, credit unions and other financial institutions, certificates of deposit, government bonds/loans, securities, debentures and loans to non-household members.</p> <p>— <i>Dividends</i> are receipts from investment in an enterprise in which the investor does not work. This includes 'silent' partners. Pensions and annuities in the form of dividends from voluntary private insurance schemes are also included. Dividends should be recorded net of any expenses incurred in earning them, including <u>interest paid</u>. It excludes withdrawal of income from a quasi-corporation that are treated as income from self-employment.</p> <p>— <i>Rents</i> are payments received for the use of both unproduced assets (i.e. natural resources), such as land, and for produced assets, such as houses. Rents should be recorded net of any expenses incurred in earning them, including <u>interest paid</u>.</p> <p>— <i>Royalties</i> are receipts arising from the return for services of patented or copyright material, e.g. receipts from writings, right to make use of inventions, etc.</p>

4	Current transfers received
	<p>Transfers are receipts for which the recipient does not provide anything to the donor in direct return for the receipts. Transfers can consist of cash (in the monetary sense), of goods, or of services. Transfers may be made between households, between households and government, or between households and charities, both within or outside the country. The main motivation is to redistribute income either by government (e.g. pensions) or privately (e.g. child support). Current transfers received consist of all transfers that are not transfers of capital.</p> <p>(a) Social security pensions / schemes — Social security pensions, insurance benefits and allowances generated from government sponsored social insurance schemes (compulsory/legal schemes) such as pensions (including military and overseas pensions), unemployment and sickness benefits.</p> <p>(b) Pensions and other insurance benefits — Pensions and other insurance benefits from employer sponsored social insurance schemes and private funded schemes not covered by social security legislation (both funded and unfunded). Pensions received from contributory or private funded schemes may represent a running down of the household's assets where the underlying capital is consumed. They are, however, included as income as they are considered as income by households, especially retired households, and are used for consumption.</p> <p>(c) Social assistance benefits — Social assistance benefits from governments (universal or means-tested) which provide the same benefits as social security schemes, but which are not provided for under such schemes.</p> <p>(d) Current transfers from non-profit institutions — Current transfers from non-profit institutions (e.g. charities, trade unions and religious bodies) in the form of regular gifts and financial support, such as scholarships, union strike pay, union sickness benefits and relief payments.</p> <p>(e) Current transfers from other households — Current transfers from other households in the form of family support payments (such as alimony, child and parental support), regular receipts from inheritances and trust funds, regular gifts, financial support or transfers in kind of goods or services (e.g. housing or child care services). They include transfers from non-resident households (remittances) which can be of significant importance to the economic well-being of some households and are of particular policy interest for a number of developing countries.</p>
5	Current transfers paid
	<p>Current transfers paid consist of direct taxes (net of refunds), compulsory fees and fines, current inter-household transfers paid, employees' social insurance contributions, and current transfers to non-profit institutions.</p>

The micro cash disposable income is expressed as follows: $DI = 1 + 2 + 3 + 4 - 5$.

Annex 5: Reducing the scope of National Accounts data: separation of estimates for (i) households and (ii) non-profit institutions serving households

Introduction

Six of the countries belonging to EU-27/EFTA (Denmark, Germany, Ireland, Austria, United Kingdom and Switzerland) disseminate NA estimates that combine the household and Non Profit Institutions Serving Households (NPISH) sectors. For these countries and only for the sake of this exercise, the a-minima exercise reduced the NA data scope to cover only households by estimating the value for NPISH and removing it from the combined sector estimates. This therefore provided a NA benchmark term that includes only households. This short note reports how the NPISH scope reduction is applied to data on the combined household and NPISH sector for the six countries.

Sources

This exercise drew on:

- information for gross disposable income, total resources and total uses of NPISH for those countries that do publish separate accounts for the two sectors (in this annex, these countries are labelled separate-sector countries ⁽³⁸⁾)
- data on final consumption expenditure for NPISH for all countries
- the available split between households and NPISH for the whole sequence of accounts for the separate-sector countries
- some supplementary information from Austria and Switzerland that send regularly to Eurostat for NPISHs the following variables ‘Consumption of fixed capital’ and ‘Gross operating surplus plus gross mixed income’. Figures for these two variables are identical in both cases.

Method

The method can be summarised in three steps:

Step1: estimate disposable income for NPISH.

Step2: estimate total resources (TR) and total uses (TU) for NPISH.

Step 3: use the ratio of household to NPISH thus obtained for all income components

Disposable income gross — step 1

The item final consumption expenditure is the only piece of information that is available for NPISH for all the EU-27/EFTA members in the Eurostat database. It gives a clear indication of the importance of NPISH (in terms of goods and services provided freely by NPISH to households) in relative to the total economy, as it is an intrinsic part of the calculation of GDP using the demand-side approach. ESA2008 (paragraph 2.103) defines this variable as the following:

‘..Final consumption expenditure covers transactions in final consumption of goods and services for which a sector is the ultimate bearer of the expense. Government and NPISH produce non-market goods and services in their production account, where intermediate consumption or compensation of employees are recorded as uses. Final consumption expenditure of these producers relates to the value of their output of non-market goods and services, less their receipts from the sale of non-market goods and services at prices which are not economically significant. However, it also covers goods and services that are purchased by government or NPISH for ultimate transfer, without transformation, to households....’

Based on the assumption that NPISH finance their in-year final consumption expenditure with their in-year resources and disposable income, regression models with and without intercept are fitted, with disposable income as the dependent variable and final consumption expenditure as the independent

⁽³⁸⁾ All the remaining countries in the EU-27 but for Romania, Sweden and Malta.

variable.

As the intercept turned out to have no statistical significance, the model fitted has the following form:

$$Y_{DI} = \beta_{DI} * X$$

Where Y_{DI} is disposable income and X is final consumption expenditure.

For the combined-sector countries, the estimates of disposable income for NPISH obtained from this model are presented below, together with the values of final consumption expenditure.

Total resources (TR) and total uses (TU) — step 2

Similarly, regression models with and without intercept have been fitted using total resources as the dependent variables and final consumption expenditure as the independent variable.

Again, the intercept turned out to have no statistical significance, so the model has the following form:

$$Y_{TR} = \beta_{TR} * X$$

Where Y_{TR} is the variable total resources and X is final consumption expenditure.

The variable total uses is obtained by subtracting disposable income from total resources.

Distribution of TR and TU and their components — step 3

A simple average of the split of components is calculated across the separate-sector countries and applied to total resources and total uses. These rough results are intended to be used in the a-minima exercise only.

Then, the different components of total NPISH resources were estimated by using the structure of resources available for the separate-sector countries. The uses components were obtained in a similar way.

The supplementary information for Austria and Switzerland are integrated in the estimates as constraints by imposing their values to the corresponding income components. And, finally, the constraint that the value of NPISH should be less than or equal to the value of the combined household and NPISH sector was imposed.

In order to calculate Property income before the FISIM adjustment, the average ratio of FISIM to property income for the separate-sector countries was used⁽³⁹⁾.

Table 18 includes final results for NPISH sub components of total resources and total uses.

⁽³⁹⁾ United Kingdom does not disseminate property income before the FISIM allocation either for the S14+S15 mixed sector.

Table 18: NPISHs estimate, 2008
(millions of Euros)

Income component	Denmark	Germany	Ireland	Austria	United Kingdom	Switzerland
Gross operating surplus plus gross mixed income	154	10574	1075	315	4107	839
Compensation of employees	0	0	0	0	0	0
Property income received	190	13005	1322	441	5051	728
Property income received before FISIM allocation	148	10134	1030	344	5051	567
Social contributions	0	463	47	16	180	26
Social benefits other than social transfers in kind	0	0	0	0	0	0
Non-life insurance claims	9	643	65	21	250	34
Other current transfers received, n.e.c.	1585	15944	2976	3667	42227	6051
Property income paid	36	604	82	66	771	114
Property income paid before fisim allocation	55	921	125	101	771	174
Current taxes on income, wealth, etc.	10	214	29	23	273	40
Social contributions	0	0	0	0	0	0
Social benefits other than social transfers in kind	0	347	47	38	443	66
Net non-life insurance premiums	3	56	8	6	72	11
Other current transfers paid, n.e.c.	102	1957	264	215	2497	370

Annex 6: Reducing the scope of National accounts data: separation of estimates for (i) private households and (ii) non-private households

The aim of the a-minima exercise is to estimate the breakdown of NA household data by category of household. To do this, distributional information from EU-SILC is combined with economic aggregates from the households sector accounts.

The combination of information from the two separate data sources is best carried out when the scopes of the two sources are made as harmonised as possible. The scope for NA differs from that for micro data sources. The scope of EU-SILC is the current members of all private households residing in the territory of the Member State at the time of data collection. People living in collective households, in institutions and, sometimes, in overseas territory are generally excluded from the target population, whereas they are included in the NA.

In particular, EU-SILC excludes people living:

- in boarding houses, dormitories in an educational establishment or other living quarters shared by more than five persons without sharing household expenses
- as lodgers in households with more than five lodgers
- in old people's homes, healthcare institutions, religious institutions (convents, monasteries), correctional and penal institutions.

This different-scope issue has a greater impact on some income components than on others: for example, old people's homes and the value of pensions.

To complicate the issue, the definition of 'institutions' (or 'collective households') is country-specific, and sometimes even region-specific. Also, there may be no standard definition in a country, with there being different definitions for different purposes. In general, 'institutionalised people' are defined as having the institution (or 'collective household' - and not a 'private household') as their usual residence.

The purpose of this annex is not to be exhaustive about what are the exact specifications of the different definitions of the institutional population across Europe, but to develop a simple method for estimating the income of the institutional population for the purposes of the a-minima exercise.

For the sake of simplicity in this Annex, we refer to people that do not live in private households simple as 'non-private households' or NPH whereas people targeted by EU-SILC will be referred to as 'private households' or PH.

There are two ways to make this scope adjustment: to add the income of NPH to EU-SILC or to remove NPH income from NA. In the a-minima exercise, the latter option was chosen.

Sources

Carrying out this adjustment makes use of the following information:

- data from the 2001 Census split by 'Person living in an institutional household' and 'Person living in a private household' ⁽⁴⁰⁾ by age
- demography data for 2008 on total population by age
- per capita value of the EU-SILC income variables calculated under specific assumptions by age class

and for Italy only:

- ad hoc specific information for non-registered immigrants employees.

⁽⁴⁰⁾ The Census definitions of institutional households is generally different from the EU-SILC definition. In this exercise we assume that they are the same because this is the only source of information available on people living in this kind of accommodation.

Method

This adjustment can be described in three steps.

First step: update Census data by calculating the Census share of the number of people, by age class, living non-private households (NPH) out of the total population, and applying these shares to the average of 2008 and 2009 demography data by age class. The assumption made is that the ratios have not changed between 2001 to 2008.

The calculation was carried out for the following age classes AC:

AG	1	2	3	4	5
age	<20	20 - 29	30 - 44	45 - 64	>64

If $\overline{pop}_{08,ac}$ is an estimate of the population for 2008 for the age class ac given by $\overline{pop}_{08,ac} = (pop_{08,ac} + pop_{09,ac})/2$; the number of people living in NPH by age class ac in year 2008 is given by:

$$(11) \quad pop_{NPH,08,ac} = Sh_{NPH,ac,C01} * \overline{pop}_{08,ac}$$

where $Sh_{NPH,ac,C01}$ is the share of NPH out of the total population from the Census (C01) for the age class $AC=ac$.

Second step: estimate average per capita values for each age class for the different EU-SILC variables, and multiply by the number of people living in other accommodations from the first step.

This step involves several assumptions, which are discussed below.

Given the value of any personal variable P_{SILC} , the calculation of the per capita value \overline{P}_{SILC}^{ac} by age class ac is given in equation (12):

$$(12) \quad \overline{P}_{SILC}^{ac} = \frac{\sum_{x \in ac} P_{SILC,x} * weight_{SILC_x}}{\sum_{x \in ac} weight_{SILC_x}}$$

Where $P_{SILC,x}$ is the variable P surveyed for the individual x . A different treatment is required for EU-

SILC household-level variables because these refer to all people in a given household and not simply to individuals. A solution has been proposed by experts in France, as part of their country-specific exercise, which has been adopted by the a-minima exercise to calculate the 'per-household' value of these variables, using the assumption that each person living in 'other accommodation' is acting as a one-person household.

Table 19: Hypotheses made to produce EU-SILC per-capita variables

EU-SILC Variable	Assumption	Method
Imputed rent	no imputed rents for NPH people	N.M.N.
Income from rental of a property or land	NPH people act as a household of 1 component	average value of HH of 1 adult (weighted)
Family/Children related allowances	NPH people act as a household of 1 component	average value of HH of 1 adult (weighted)
Social exclusion not elsewhere classified	NPH people act as a household of 1 component	average value of HH of 1 adult (weighted)
Housing allowances	no housing allowances for NPH people	N.M.N.
Interest, dividends, profit from capital investments in unincorporated business	NPH people act as a household of 1 component	average value of HH of 1 adult (weighted)
Interest repayments on mortgage	no mortgage for NPH people	N.M.N.
Income received by people aged under 16	children living in NPH and younger than 16-year-old receive only compensation of employees	per capita for HH with only one child younger than 16
Regular taxes on wealth	NPH people act as a household of 1 component	average value of HH of 1 adult (weighted)
Tax on income and social contributions	NPH people act as a household of 1 component	average value of HH of 1 adult
Employee cash or near cash income	NPH people act as the individual average	per capita value
Non-Cash employee income	NPH people act as the individual average	per capita value
Employer's social insurance contribution	NPH people act as the individual average	per capita value
Cash benefits or losses from self-employment	NPH people act as the individual average	per capita value
Value of goods produced for own consumption	NPH people act as the individual average	per capita value
Pension from individual private plans	NPH people act as the individual average	per capita value
Unemployment benefits	NPH people act as the individual average	per capita value
Old-age benefits	NPH people act as the individual average	per capita value
Survivor' benefits	NPH people act as the individual average	per capita value
Sickness benefits	NPH people act as the individual average	per capita value
Disability benefits	NPH people act as the individual average	per capita value
Education-related allowances	NPH people act as the individual average	per capita value

Note: N.M.N. stands for no method needed.

So, if H_{SILC} is any EU-SILC household variable, the per capita value \overline{H}_{SILC}^{ac} for the age class ac is given by equation (13):

$$(13) \quad \overline{H}_{SILC}^{ac} = \frac{\sum_{x \in ac \cap NC=1} H_{SILC,x} * weight_SILC_x}{\sum_{x \in ac \cap NC=1} weight_SILC_x}$$

where NC is the number of household members and x a household in the sample.

A further assumption that has been made is that people living in non-private households do not own a house. This assumption means that the values of the EU-SILC variables related to ‘imputed rents’, ‘housing allowances’ and ‘interest repayments on mortgage’ are all set to zero for these people. Finally, the per-capita value of the EU-SILC variable income received by people aged under 16 is obtained by estimating the average of the amount earned by a child of the corresponding age. Children under 16 that belong to the same household receive an amount of HY110g corresponding to the average across all the children of the household.

We have then:

$$(14) \quad \overline{HY110G} = \frac{\sum_{x \in Ch16} HY110G_x / NCh16_x * weight_SILC_x}{\sum_{x \in Ch16} weight_SILC_x}$$

where x a household, $Ch16$ is the subset of the children under 16 and $NCh16_x$ is the number of children under 16 in the household x . As this income goes to people under 16-year-old, this per-capita value should be adjusted by the share of population aged less than 16 years in the population aged less 20 years and assigned to age class 1.

The per-capita values are then multiplied by the number of people living in NPH by age:

$$(15) \quad H_{NPH}^{ac} = \overline{H}_{SILC}^{ac} * pop_{NPH,08,ac}, \quad P_{NPH}^{ac} = \overline{P}_{SILC}^{ac} * pop_{NPH,08,ac}$$

Third step: calculate the NA components related to people living in ‘non-private households’.

The values from the second step are firstly added up across the age classes to obtain general totals. With these totals, the a-minima exercise constructs EU-SILC proxies for people living in other accommodations (NPH_{SILC}) following the scheme of the NA/EU-SILC comparison (Table 2).

These NPH proxies are then added to EU-SILC standard variables that by definition refer to private households (PH_{SILC}) to obtain a population total. Finally, the share of NPH in this total is obtained for the income component x and applied to NA total T_{NA} by using the following formula:

$$(16) \quad \hat{T}_{NPH} = \frac{NPH_{SILC}}{NPH_{SILC} + PH_{SILC}} * T_{NA}$$

Where \hat{T}_{NPH} is an estimate of T_{NPH} , the part of T_{NA} relating to all persons living in NPH.

Finally, we have an estimate of T_{PH} , the part of T_{NA} relating to persons living in PH:

$$(17) \quad \hat{T}_{PH} = T_{NA} - \hat{T}_{NPH}$$

This procedure was applied to Belgium, Bulgaria, Czech Republic, Denmark, Germany, Estonia, Ireland, Greece, Spain, France, Italy, Cyprus, Latvia, Lithuania, Luxembourg, Hungary, Malta, Netherlands, Austria, Poland, Portugal, Romania, Slovenia, Slovakia, Finland, Sweden, United Kingdom, Norway and Switzerland.

In the limited timeframe of this exercise, the scope reduction for social transfers in kind was obtained using a crude method, which involved applying the same NPH share of cash social benefits to NA data for Stik. More accurate estimates could have been obtained by using the same procedure as in EU-SILC (§3.2.1), suitably adjusted.

During the development of this part of the exercise, two issues linked to the Census arose. Firstly, the Census does not distinguish between the kinds of accommodation of people living in non-private households. This would have added more precision to the estimate as some income components are seldom received by people living in certain kinds of accommodation such as, for example, wages and salaries for individuals that are in prison.

Moreover, as the final structure depends to a great extent on the Census share of non-private households, and as the a-minima scope was performed with 2001 Census data but applied to the 2008 reference year, if in the meantime the percentage of the population living in NPH changed, these results are out-of-date ⁽⁴¹⁾.

As well as the updating of the Census data, also the integration of the Census information with additional sources that split people living in non-private households by kind of accommodation could help significantly in improving this estimation.

A further step for Italy

For Italy, the non-private households results for the components ‘compensation of employees’ and ‘miscellaneous current transfers in the use side’ have been corrected for non-registered immigrant employees ⁽⁴²⁾, whose activity is currently taken into account in the Italian NA estimates.

The following assumptions have been made in this step:

1. non-registered immigrants living in NPH are included in Census data
2. their work is remunerated by the average level of wages and salaries
3. non-registered immigrants send money to their country like regular immigrants.

Regarding compensation of employees, the number of non-registered immigrants who are employees has been multiplied by the average level of wages and salaries for people less than 65 years old and added to the NPH estimate for compensation of employees.

For miscellaneous current transfers on the use side, given the number of registered immigrants in the country, the total number of immigrants was estimated by adding the non-registered immigrant workers. The share of non-registered immigrants out of total immigrants was calculated.

The share of non-registered immigrants out of total immigrants was then applied to the amount of remittances from Balance of Payments in order to estimate the value of remittances for non-registered immigrant workers. Finally, this value was added to the previous estimate of the Italian miscellaneous current transfers related to NPH.

⁽⁴¹⁾ Already during the activity of the Expert Group, the expert from Switzerland verified with annual data that are available in that country that the Census results for 2001 were out-of-date by 2008.

⁽⁴²⁾ Information on the number of non-registered immigrants in Italy for year 2008 is available at the following link:
<http://www.istat.it/it/archivio/48022>.

For these latter two income components, equation (16) should be corrected by a factor to take into account the fact that non-registered immigrants activities are already included in NA data.

Equation (16) therefore becomes:

$$(18) \quad \hat{T}_{NPH} = \frac{NPH_{SILC}}{NPH_{SILC} + PH_{SILC}} \cdot (T_{NA} - \hat{T}_{NRI}) + \hat{T}_{NRI}$$

where \hat{T}_{NRI} is an estimate of the part of T_{NA} accounted for by non-registered immigrants

The applicability of a similar correction should be verified for other countries.

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